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71-742.

GEOPEKO LIMITED

King Island Group

GEOLOGICAL PROGRESS REPORT

EXPLORATION LICENCE 4/69

AND

EXPLORATION LICENCE 23.69

MICROFILMED

by: W. Mayer.

KING ISLAND

MARCH, 1971.

ISG COORDINATES
REFER REPORT 70-0676

AMG REFERENCE POINTS ADDED

C O N T E N T S :

INTRODUCTION

SUMMARY

CONCLUSIONS

RECOMMENDATIONS

TENEMENTS

(a) DETAILED MAPPING

(b) REGIONAL GEOLOGY

(c) GEOCHEMICAL WORK

REFERENCES

APPENDICES

4 sheets (3 Schmidt nets, 1 direction rose) are attached to the Report.

Geological Map Cape Wickham - 1:5000- Sheet 1 and 2.

1 set of geochemical diagrams and maps:

Frequency histograms for Cu,Pb,Zn,Ni,Co,Cr,Ba,Sr,W.

Frequency histograms for Cu,Pb,Zn,Ni,Co,Cr,Ba,Sr,W related to schists and granite.

Accumulative frequency distribution curves for Cu,Pb,Zn, Ni,Co,Cr,Ba,Sr,W.

Geochemical maps for Cu,Pb,Zn,Ni,Co,Cr,Ba,Sr,W.

Regional geological and interpretation map 1 inch = 1 mile.

INTRODUCTION

The mapped coastline belongs to E.L. 4/69 and E.L. 23/69 and comprises approximately 10 miles of coastal outcrops with some sand beaches included. At the end of 1970 only the regional sheets 1:12000 (Progress Report E.L. 23/69 by P. LE MESSURIER & G. LISTER, April, 1970) of this area with undifferentiated schists and granite existed. It was hoped that detailed mapping on a scale of 1:5000 would lead to some information about the inland geology which is largely veiled by sand and soil cover, and give some explanation for anomalous geochemical values obtained by Gemco work inland.

Coastline maps 1:5000 had to be produced from airphotos with appropriate accuracy to assist accurate positioning. Despite excellent airphotos the accuracy obtained was not always satisfactory. The mapping was carried out from December 1970 to January, 1971.

For geological reconnaissance work in E.L. 4/69 and E.L. 23/69, 119 Gemco holes have been drilled between 9-6-70 to 26-9-70. The holes were drilled along roads and were spaced approximately 1000 feet apart. The aim of the drilling was to obtain optimum geochemical and geological information in this very flat and out crop poor country. The drilling was carried out with the standard Gemco Drill and equipment, but often proved to be difficult due to wet ground conditions and very extensive sand and soil cover. The average depth of the holes was 30-40', but depth of 90-100' were reached in some cases and the Precambrian basement was not always encountered.

Soil samples were sent away to Mc Phar Geophysics for assaying and the corresponding rockchips were examined thoroughly for rocktype information. Geochemical results and rocktypes were plotted on the Regional Geological Map of King Island (1 inch = 1 mile).

SUMMARY

Detailed mapping 1:5000 resulted in a better understanding of the Regional Geology and revealed many small scale features previously not recorded. It is emphasised that not enough specialised studies have been undertaken to answer all the pending questions. Questions of some consequence remain unsolved so far. Mineralisation of interest was found only in scheelite bearing boulders the origin of which was located. The source of the scheelite itself is still in question.

Geochemical results and rockchip examination combined with some regional mapping provided a geological picture which seems to be quite reliable as a base for future work but cannot be regarded as final. Two geochemical anomalies have been found which require further detailed testing. It became evident that this type of geochemical work involves both methodical and interpretation problems which could not be solved satisfactorily. (ie. threshold value calculation).

CONCLUSIONS

Very poor mineralisation in the schists, aplites, pegmatites, basic dykes and in the granites leads to the conclusion that both countryrock and intrusives are not likely to have economic deposits associated with them.

It is believed that Gemco drilling together with mapping is the best method in this sort of country to provide geochemical and geological information.

Weather conditions are a decisive factor for Gemco work. It is evident that some areas are of further interest are accessible for the Gemco drill only under dry conditions.

RECOMMENDATIONS

1. Systematic mapping covering shingle and rock outcrops of all significant sections of the mapped coastline should be continued.
2. Further thin section studies be carried out to obtain better understanding of the grade of metamorphism of the schists.
3. The two tungsten-anomalies located during the regional programme should be tested by further geochemical work carried out on a grid pattern. No further geochemical work for any other metals is recommended in the already investigated area
4. An appropriate number of widespaced Gemco holes should be drilled along the track South of the Southeast corner of Haines Road towards the Mt. Council area, as this area is devoid of any geological information so far.

TENEMENTS

King Island Scheelite Ltd. applied for E.L. 4/69 in Feb. 1969 and the Exploration Licence was granted in March, 1969. The latest application for renewal was made for 14/3/1971 and an extension was granted for a further six (6) months. E.L. 4/69 covers an area of 35.5 square miles.

E.L. 23/69 was granted to King Island Scheelite Ltd for a period of six (6) months from October 16th, 1969. The E.L. is currently held until the expiry date of 16th April, 1971. E.L. 23/69 covers an area of 53 square miles.

(a) DETAILED MAPPING

Two major structural and lithological units occur in the mapped area, both believed to be Precambrian age.

(I) The highly metamorphosed schists with numerous aplites, pegmatites, and basic dykes. (Westcoast - Schists)

(II) The granites (Westcoast - Granite)

(I) The Schists

On the Westcoast the schists extend from the beginning of the outcrops North of Phoques Bay nearly continuously to near Cape Wickham where they contact the granite. On the Northeast coast they appear only over about 800 metres enclosed within the granite and in places very intermixed with the granite. In the granite itself the schists occur as xenoliths from few centimetres to metres in length.

It is emphasised that different types of schists have not been distinguished although there is great variety and virtually all transitions. Only such distinct lithological units as massive quartzite beds or schists interbedded with quartzite have been differentiated on the map.

Petrography

In this study no significant information has been obtained so far concerning the grade of metamorphism in the area. Preparation of thin sections has been concentrated on the basic dykes and only a few insignificant slides have been prepared from the schists. A previous worker (A. JANNINK, September, 1969) mentions muscovite-sillimanite-garnet-schist, a typical katazonal rock. This couldn't be substantiated by the slides studied but is what the author would expect from field observations.

The typical schist is rather quartz-rich micaschist, very dense and hard and devoid of typical katazonal minerals. Observations of the rocks give evidence that the schists were once plastic and in places semifluid,

(I) The Schists (Cont.)

This is due to different stages of mobilisation which can be observed from boudinage-types to lenticular or veinlike quartz-feldspar sweets and pegmatitic veins. Apart from high Pressure-Temperature conditions a high water content of the system is regarded as an essential factor to allow mobilisation and short distance injections of the quartz-feldspar phase. Due to greater mobilisation, pegmatites, stronger schistosity and denser rock-properties the grade of metamorphism seems to increase slightly from South to North.

Structural Setting

To obtain as much structural information as possible bedding and schistosity as well as jointing has been measured every 100 to 200 metres. Usually bedding is well developed and best visible in the interbedded quartzites. Schistosity is present in most of the rocks apart from the massive quartzite beds. It is always parallel with the bedding where both can be observed and where bedding has disappeared or is replaced by metamorphic layering, it is strongly felt that the bedding has been parallel with the schistosity.

The bedding planes are usually corrugated and often display linear elements. Dragfolding in centimetre to metre scale is an intrinsic feature of most of the sequence and is especially well developed at the contact to the big basic dykes which even have been observed to cause local variation from the regional strike of the schists.

The sequence of the schists along the Westcoast has a general North-South strike and steep dips (60° - 80°) to the West. Many minor local variations occur and are regarded as typical expression of plasticity under severe regional metamorphic conditions. The coastal outcrops don't yield a broad view over the sequence because both coastline and beds trend the same way.

Structural Setting (Cont.)

Only one larger scale structural element could be found: an asymmetrical anticline about one mile north of the end of the Phoques Bay beach. It can not be traced beyond the locality and therefore it is doubtful whether it has regional character. On the East limb of the fold the dip of bedding is very steep and different to that on either side of it. The bedding returns to the general westerly dip after approximately 100 metres going south thus leaving a zone of complication in between.

Bedding in the schist section on the Northeast coast could suggest a synclinal structure but chaotic dragfolding and heavy injection of granite phases make this evidence somewhat doubtful.

Joints are generally very well developed and are an intrinsic feature of the coastline. They fit into the general structural picture without adding much to a better understanding of the overall structure.

Faulting could only be observed in form of small cross-faults with horizontal and vertical displacement of a few metres or less.

Aplites, pegmatites and basic dykes in the schists

Pegmatites are more abundant than aplites which are confined to relatively small bulky outcrops that have the appearance of a finegrained type of Westcoast granite. In contrast the pegmatites occur mainly in veinlike bodies of a few centimetres to metres in width and only a few as big bulky bodies. Most of the vein-type pegmatites lie conformably within the schists, while some others have either a different dip or transect the bedding. The classical and most common type is a coarse to very coarse quartz-feldspar pegmatite which is usually rich in black tourmaline and often displays gradational increase in grain size towards the centre. It appears that grain size largely correlates to the width of the pegmatite, i.e. the thicker the vein the coarser the grain size. Orthoclases and tourmalines can reach more than 10 centimetres in size in extreme cases.

Aplites, pegmatites and basic dykes in the schists (Cont.)

A characteristic feature of the pegmatites seems to be their contact with the adjacent schists; it is either a very sharp, well defined plane or it is ill-defined and uneven. The first type of pegmatite usually has tourmaline and the typical pegmatite appearance whereas the second type does not have these attributes. It has been thought that type 1 may represent the genuine granitic pegmatite in contrast to type 2 which is likely to represent the mobilised granitic phase from the surrounding countryrock.

The basic dykes: have a typical rather uniform external appearance that is in great contrast to their actual petrography. The basic dykes are much more bulky bodies than the aplites and pegmatites and are less strictly bound to conformable intrusion than them. Nearly without exception they lack schistosity but have excellently developed joint-planes which correspond closely to the jointing in the schists. The contact to the schists is always very sharp and no contact zone could be observed. Thin section studies revealed that the dyke-rocks vary considerably in texture and mineralogical composition. In all basic dyke rocks there occur different amphiboles and micas with rather rich opaque mineral content (magnetite). Some types are plagioclase rich and nearly all types show alteration effects.

Mineralisation in the schists, pegmatites, aplites, and basic dykes.

Special attention was given to any mineralisation especially sulphides and oxides. In this respect results were extremely poor and only at one location a rather pyrite-rich (approx. 5% in the bedding planes) quartzitic micaschist was found. In two cases of purely scientific interest small amounts of coarse magnetite grains of graphite were found in the schists. Most of the basic dykes contain a few percent of opaque minerals, probably magnetite. The aplites and pegmatites were subject to special care: assay results for Sn, Mo, W, on 10 specimens were negative and also visually no mineralisation was ever noted.

Mineralisation in the schists, pegmatites, aplites, and basic dykes. (Cont.)

Some positive results were obtained by ultraviolet lamping which was first concentrated on some aplites and pegmatites picked out as being representatives of the lot. They proved to be completely barren. By accident specks of scheelite were found in boulders from the shingle. Subsequent lamping concentrated on following up these scheelite bearing boulders in the hope to find the corresponding outcrops. Up to date this has been achieved only in one instance and it became evident that the scheelite is confined in some irregular pods and veins in pegmatite type 2. Because all the scheelite bearing boulders are basically similar rocktypes (main components: quartz, clinozoisite), it is believed that they all originate from the same kind of occurrence as the one encountered. The source of the scheelite itself is still uncertain.

(II) The Granites crop out from the contact close to the North point of Cape Wickham along the entire Northeast coast beyond Boulder Point and are only interrupted by the above mentioned section of the schists and two extensive sand beaches. At the North end of Phoques Bay a relatively small body of the medium grained type granite outcrops and is characterised by a rather extensive zone where granite and schists chaotically intermingle.

Contact zones have nowhere been observed during the current work but are mentioned by previous workers to exist. Field observations suggest unconformable intrusion both on a small and on regional scale.

There are two types of granite which both form large intrusive bodies as well as veinlike bodies and xenoliths and both are seen to intrude each other. Type 1 is a porphyritic granite with large (max. 5cm) euhedral orthoclases set in a fine grained granitic matrix. Often the orthoclases (all Karlsbad twins) are aligned and can be so abundant in places that the rock consists nearly entirely of them. Alignment of the orthoclases was measured at Rocky Cape and seems to broadly follow the regional North-South trend. Type 2 is a common medium grained granite of grey colour. Both type 1 and 2 seem to be very poor in mafic minerals.

The Granites (Cont.)

No thin section work has been done in this study and consequently the term "granite" is used sensu lato. Large outcrops in the Southeast of the Northeast coast are represented by a mixture type and beside this type a few other special granite types (i.e. darker varieties) occur in lesser amounts and have not been differentiated on the map. Of great interest is the time relationship between type 1 and 2. Unfortunately the field observations are somewhat contradictory and the answer is still open. The assumption of anatectic granites (ARENDE, 1970) may have arguments on its side but regarding these granites as part of, and contemporaneous with, the large granite bodies on the West coast it seems very unlikely to the author.

Pegmatites and basic dykes occur in the granites in the same manner as in the schists, only less abundant. They follow the general North-South trend which is established in the granites by well developed joints and shears.

Some well defined shear zones of a few metres in width display very strong shearing which is substantiated by flattened and elongated orthoclases and a general schistose character of the whole rock which hardly could be recognised to have once been a granite if transitional stages at the sides of the shear-zone didn't exist. The shearzones appear as small bays due to their lesser resistance against wave action. ~~On~~ they have some type of quartz vein mineralisation or silicification associated with them.

No traces of sulphides, oxides or any other mineralisation have been observed either in the shear-zones, the unsheared granites of either type and the pegmatites and basic dykes associated with them.

(b) REGIONAL GEOLOGY

The examination and plotting of the rockchips from the regional Gemco work contributed much to the completion of the geological picture. The enclosed Regional Geological Map is based on field mapping and rockchip examination. The 600 - 800 metres wide Northnortheast - Southsouthwest trending zone of West coast schists which outcrops only in the above mentioned schist section within the granites is questionable on the evidence available. The same schists have been encountered in Gemco holes at 3 locations which line up in one zone.

(b) REGIONAL GEOLOGY (CONT.)

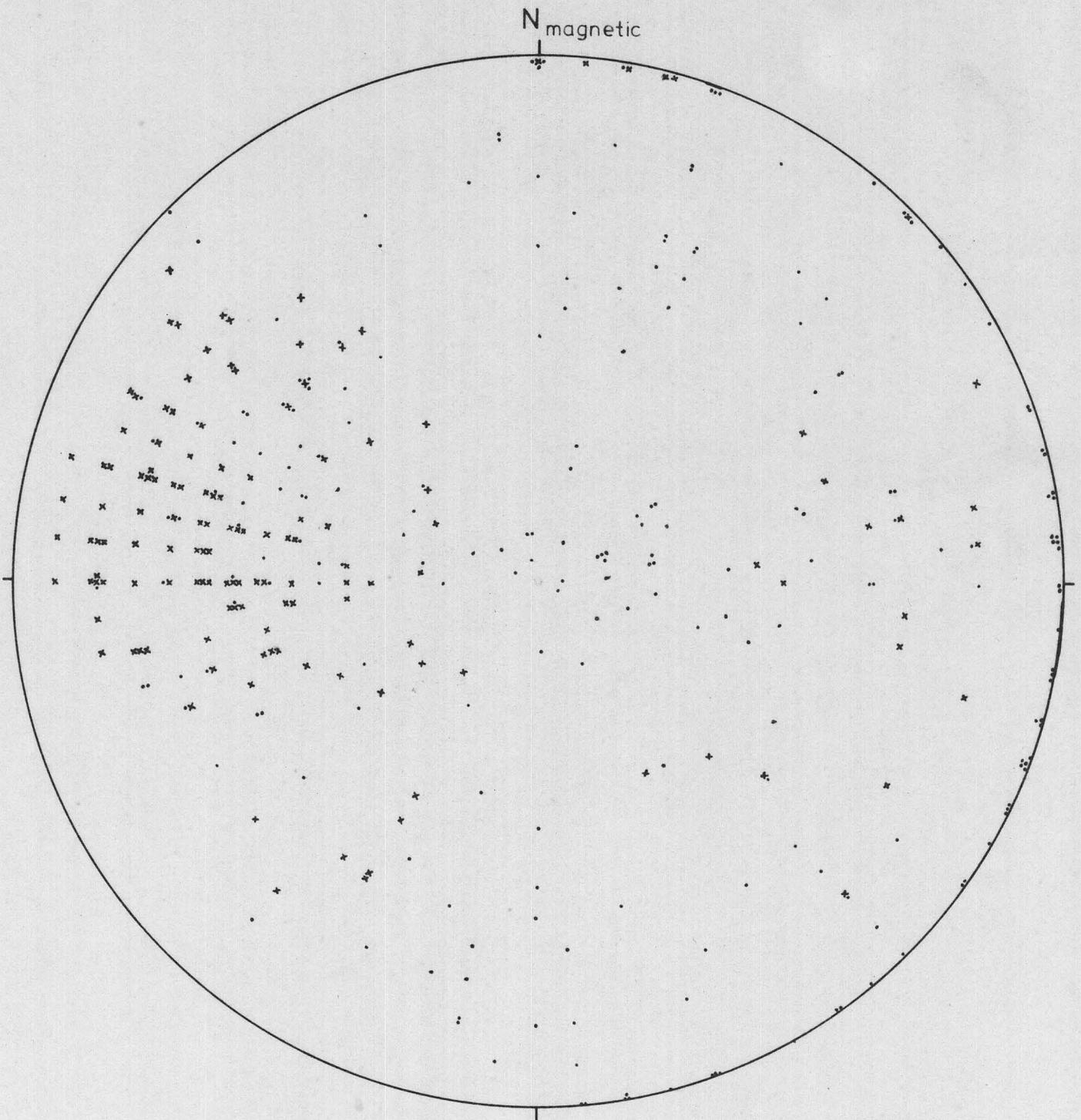
Of considerable interest is the contact of the Reekara type micaschist unit with the large body of the above described West coast granites. Further drilling is required in the Southeast corner of E.L. 23/69 to closer define the contact as well as obtain a better knowledge of the stratigraphy of this unit.

(c) GEOCHEMICAL WORK

Frequency distribution histograms and accumulative frequency distribution curves have been plotted separately for each of the following elements: Cu,Pb,Zn,Ni,Co,Cr,Ba,Sr,W. The accumulative frequency distribution curves, plotted on normal graph paper, do not clearly show the threshold values, and this value remains largely a matter of visual estimation. As a second step frequency distribution histograms were plotted separately for the granites and schists but no significant differences resulted. Then the values were plotted on the Regional Map with a colour system to show anomalous areas visually. The interpretation with reference to the geological map was not as obvious as hoped and it largely remains unknown what accounts for high values, such as those of Sr,Ba,or Ca.

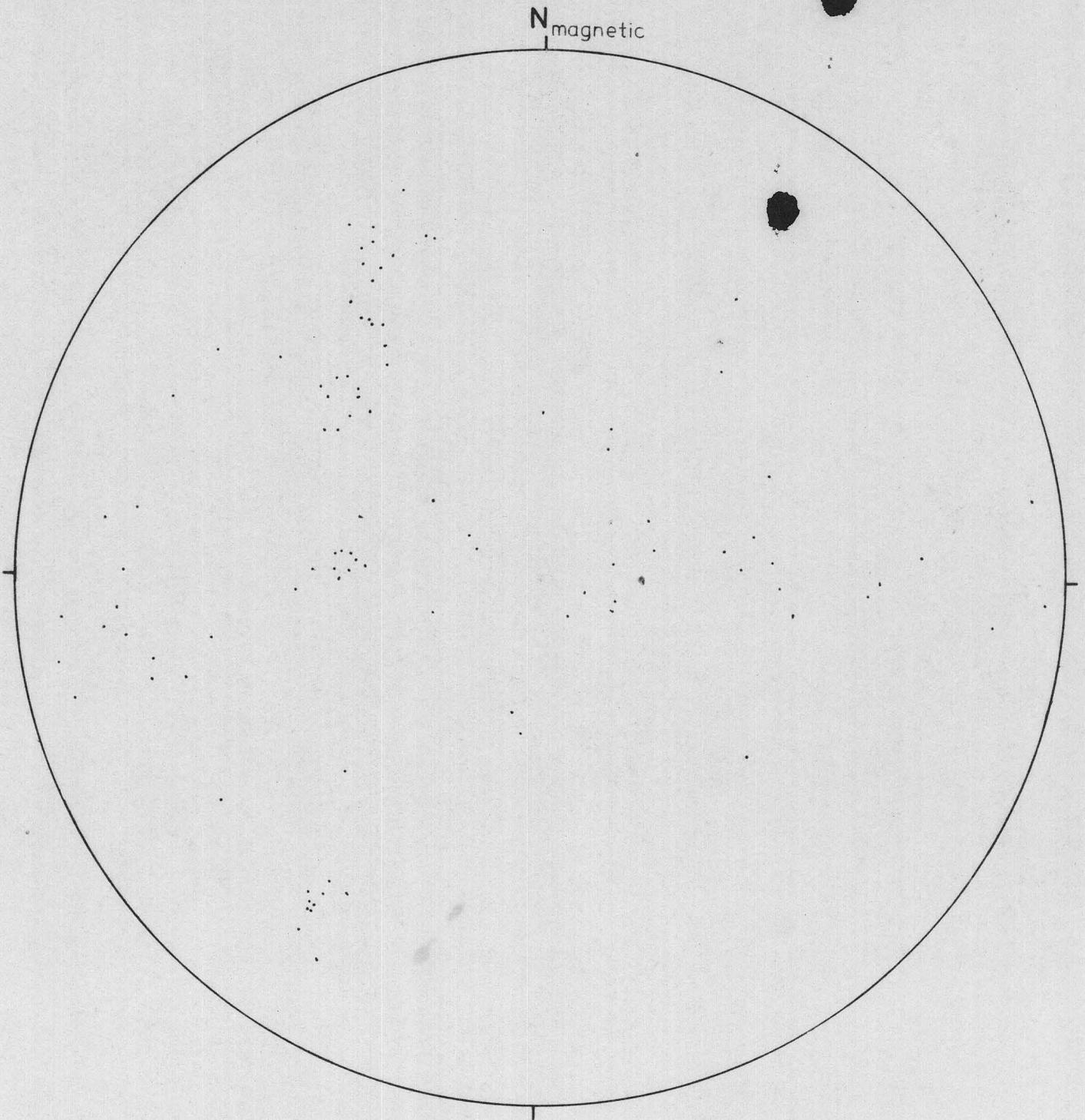
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2. ANTHONY MC KENNA & PARTNERS PTY LTD. A. JANNINK
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King Island, Tasmania. Stage 1. Geological
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3. GEOPEKO LTD., KING ISLAND GROUP.
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4/69. By W.J. ARENDT JANUARY, 1970.
4. GEOPEKO LTD., KING ISLAND GROUP
Progress Report Exploration Licence 23/69
By. P. LE MESSURIER & G. LISTER APRIL, 1970.
5. GEOPEKO LTD., TECHNICAL SEMINAR - 13th
FEBRUARY TO 20th FEBRUARY, 1970. D. GRAY.
Granites of the West Coast of King Island.



- POLES TO
- x BEDDING / SCHISTOSITY PLANES
(135 readings)
 - JOINTS (215 readings)

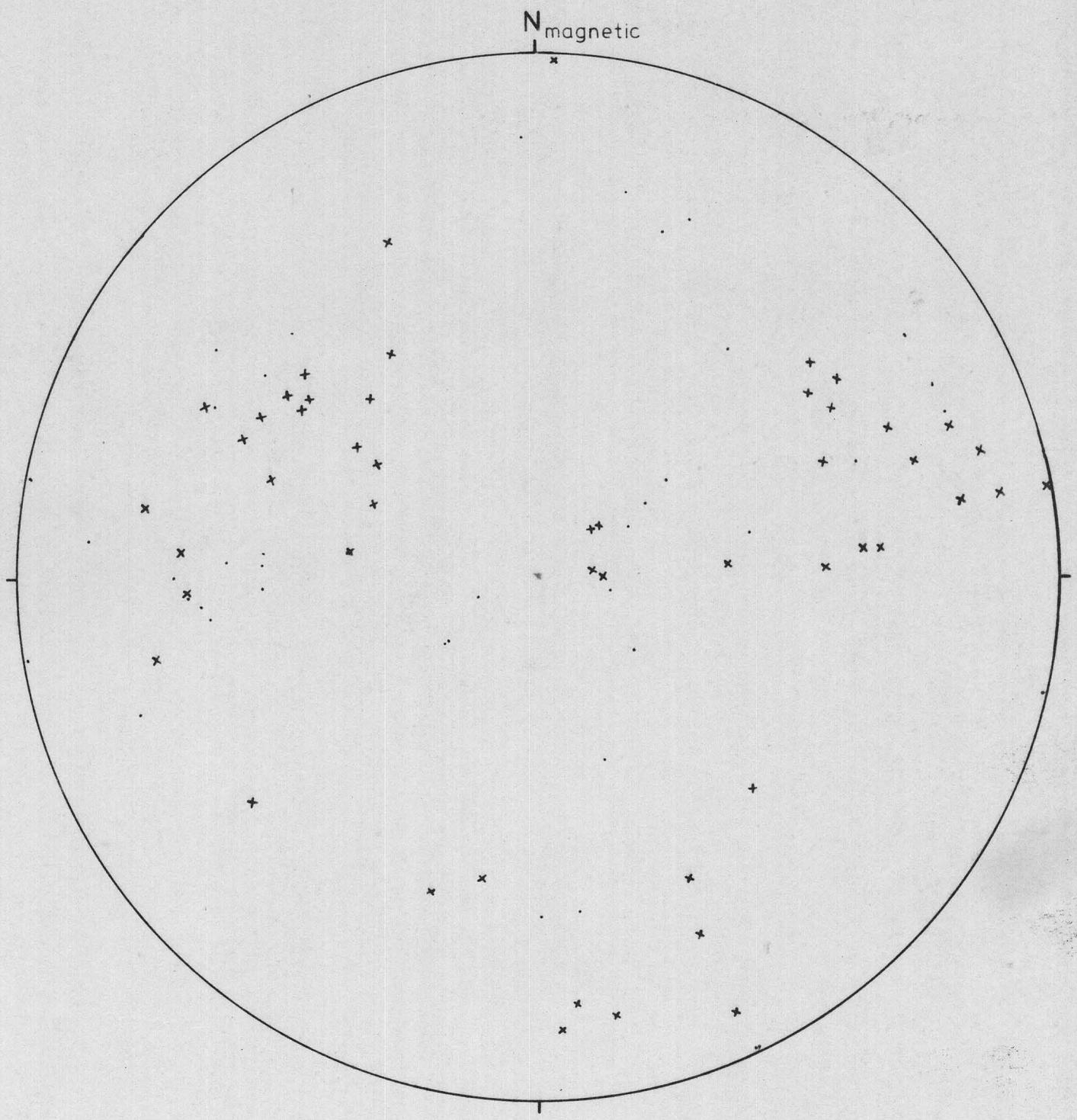
Measurements from all Cape Wickham
coastal outcrops (schists + granites)



POLES TO JOINTS
(projected from top-hemisphere)

BASIC DYKE (100 readings)

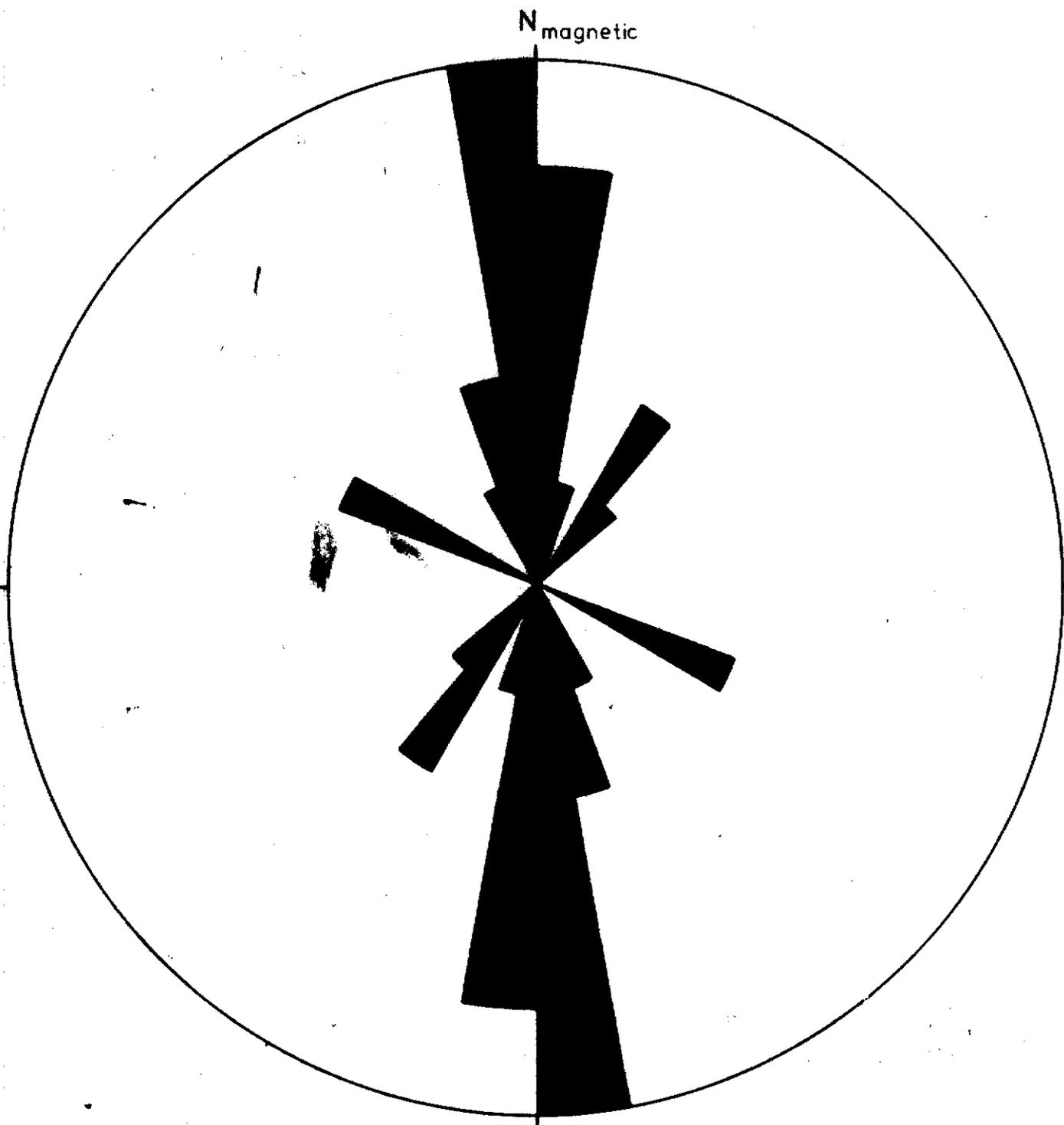
Cape Wickham Coast 43



POLES TO JOINTS
(projected from top-hemisphere)

- x GRANITE (50 readings)
- BASIC DYKE (40 ")

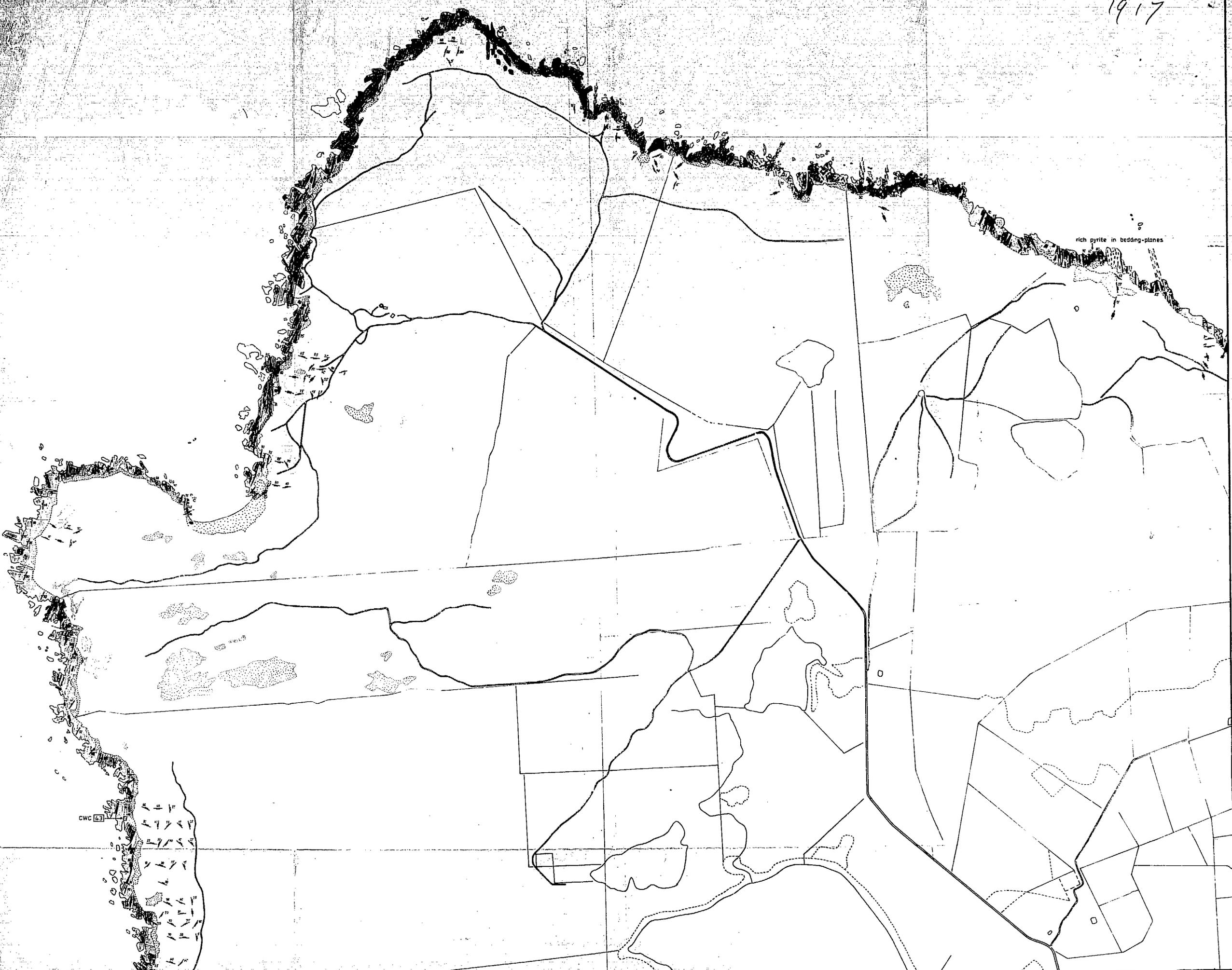
Rocky Cape



ALIGNMENT OF ORTHOCLASES
IN PORPHYRITIC GRANITE (20 readings)

Rocky Cape

1917





CWC 63

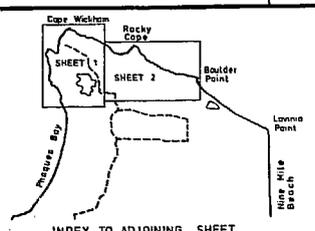


TN / MN approx. only

- Quartzitic micaschist, undifferentiated
- Quartzite
- Interbedded quartzite / qtz. micaschist
- Aplite, pegmatite
- Basic dykes, undifferentiated
- Quartz - vein
- Porphyritic granite
- aligned
- Medium-grained granite
- Coarse - porphyritic

- Geological boundary, observed
- " " inferred
- " " outcrop - boundary
- Strike / dip of bedding, schistosity
- " " joints
- Regional anticlinal axis
- Local " plunging
- " " synclinal
- Minor fault, observed
- Shearzone / sheared rock
- Dragfolding

- Road / track
- Fence
- Vegetation - boundary
- Creek
- Shingle / sandbeach
- Big boulders
- Sandblow



INDEX TO ADJOINING SHEET


 DATE: March 1971
 GEOLOGIST: W.M.
 DRAWN: W.M.
 CHECKED:

GEOPEKO LIMITED
 KING ISLAND GROUP

No. K

SCALE: 1 : 5 000 (approx)

71-742

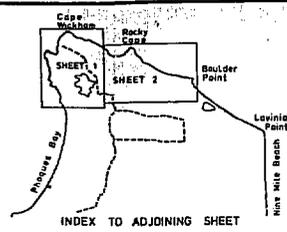
CAPE WICKHAM
SHEET 1

1917 Q2/4

- Quartzitic micaschist, undifferentiated
- Quartzite
- Interbedded quartzite / etc. micaschist
- Aplite, pegmatite
- Basic dykes, undifferentiated
- Quartz-vein
- Porphyritic granite
- " " aligned
- Medium-grained granite
- Coarse - porphyritic "

- Geological boundary, observed
- " " inferred
- " " outcrop - boundary
- Strike / dip of bedding, schistosity
- " " joints
- Regional anticlinal axis
- Local " " plunging
- " " synclinal " "
- Shearzone / sheared rock
- Dragfolding
- Minor fault, observed

- Road / track
- Fence
- Vegetation - boundary
- Creek
- Shingle / sandbeach
- Big boulders
- Sandblow




 DATE: March 1971
 GEOLOGIST: W.M.
 DRAWN: W.M.
 CHECKED:

GEOPEKO LIMITED
 KING OF THE HILL GROUP

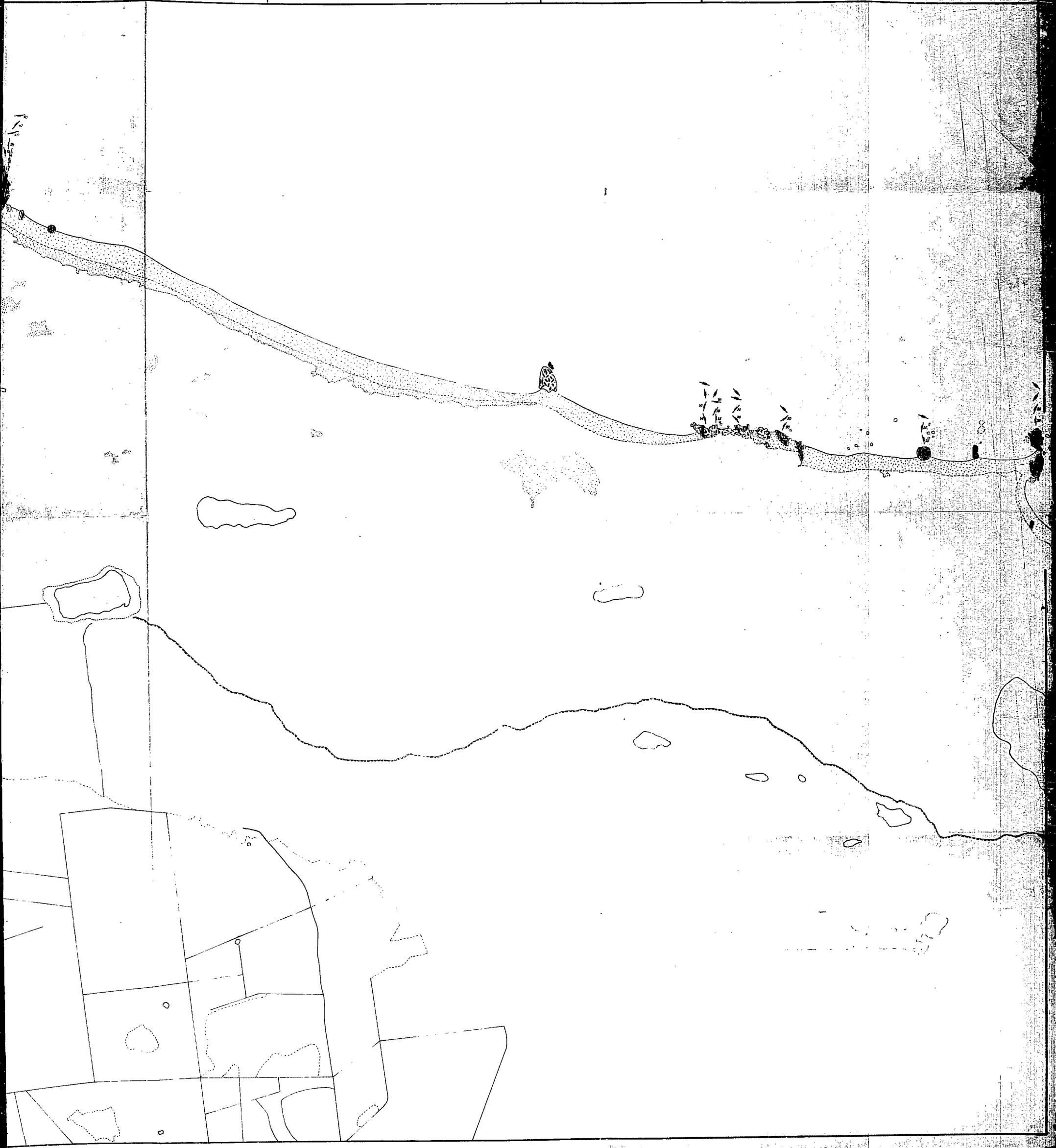
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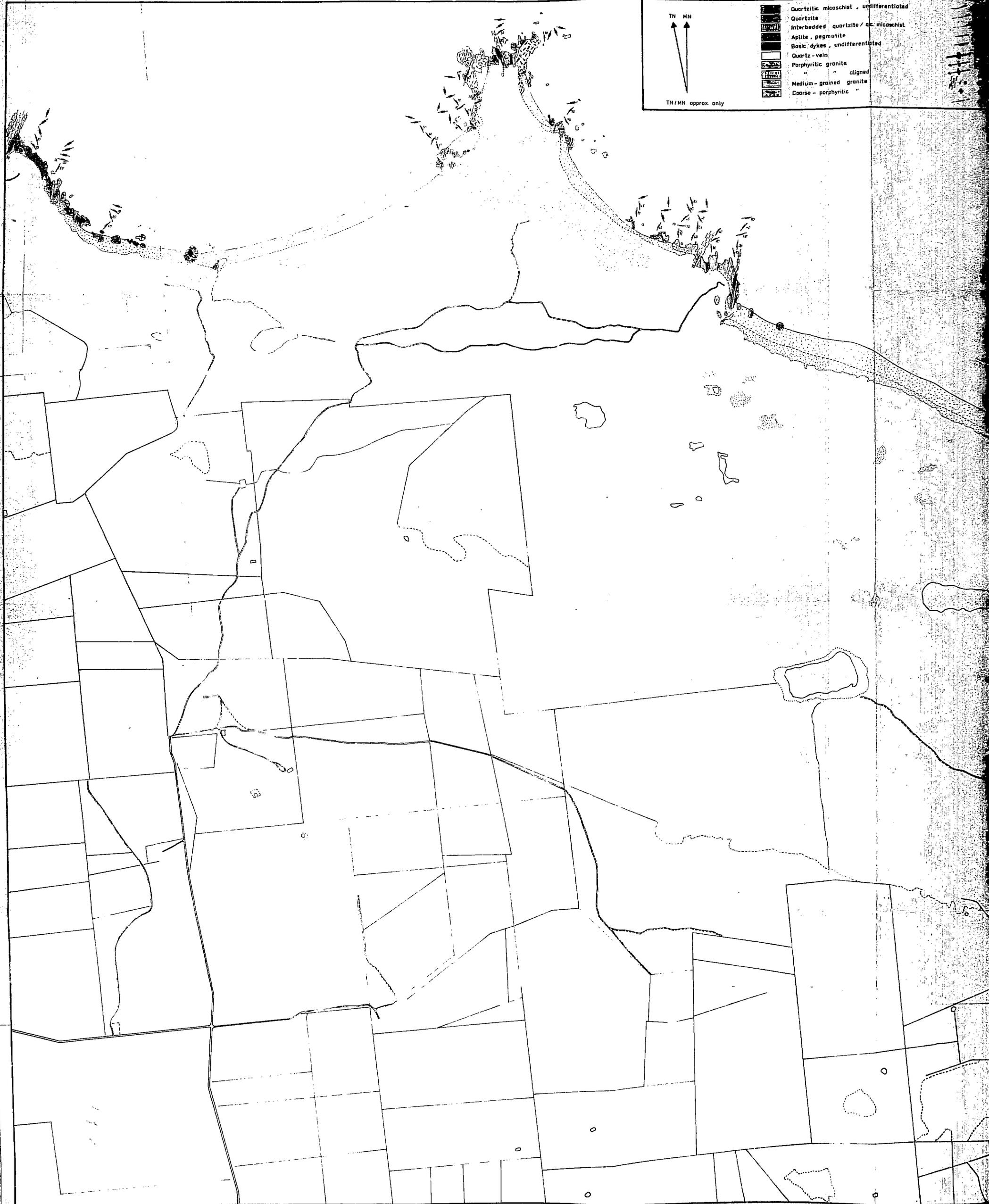
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CAPE WICKHAM
 SHEET 2

71-742
 1918

Q2/4





TN MN



TN/MN approx only

- Quartzitic micaschist, undifferentiated
- Quartzite
- Interbedded quartzite / qz. micaschist
- Aplite, pegmatite
- Basic dykes, undifferentiated
- Quartz-vein
- Porphyritic granite
- " " aligned
- Medium-grained granite
- Coarse-porphyratic "

Q2/419

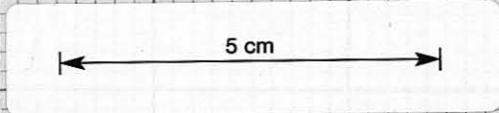
71-74?

120868

Cu (4/69, 23/69)
118 Samples

Number of samples

72



100%
Acc. Freq.

90%

40

70%

30

50%

20

30%

10

10%

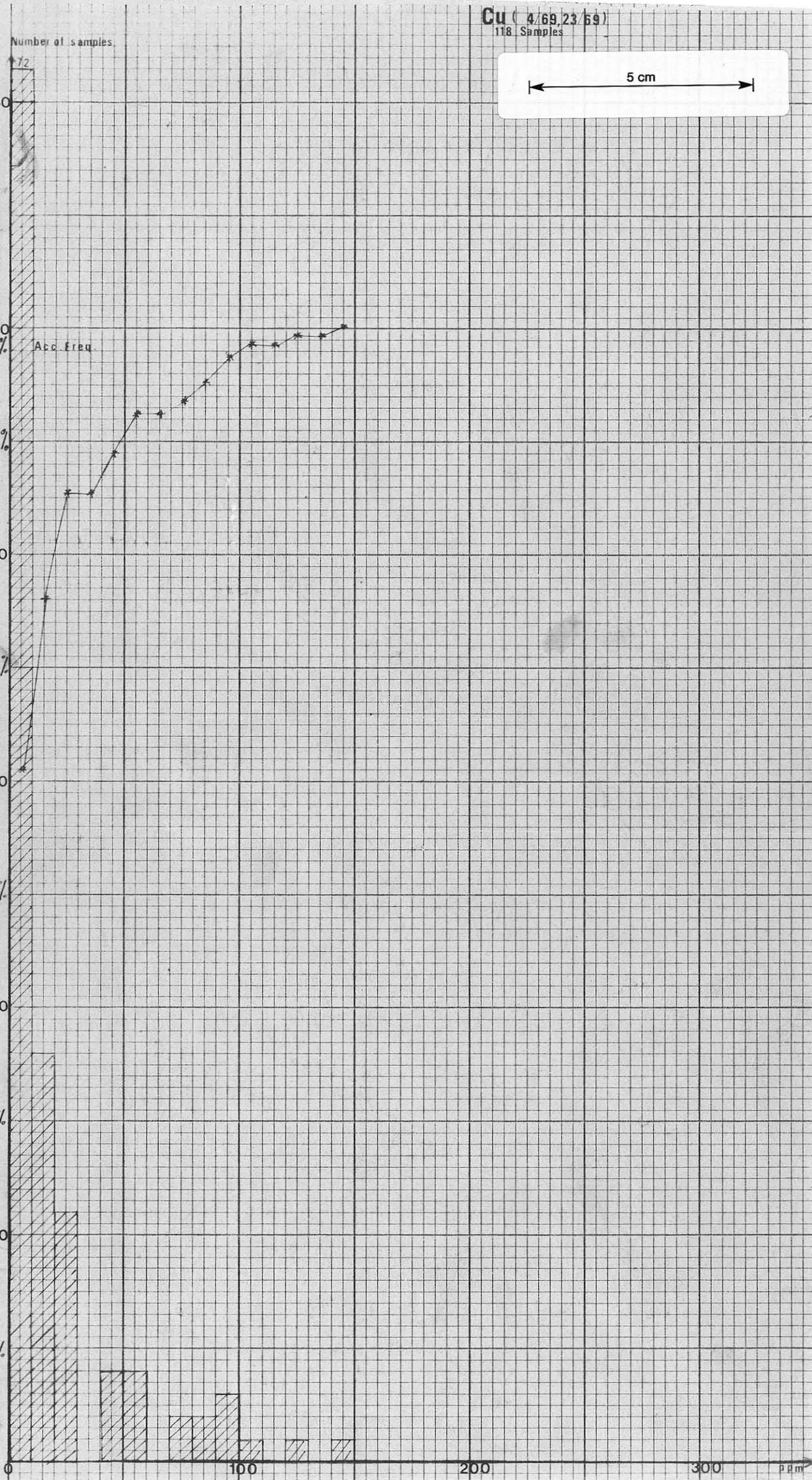
0

100

200

300

ppm

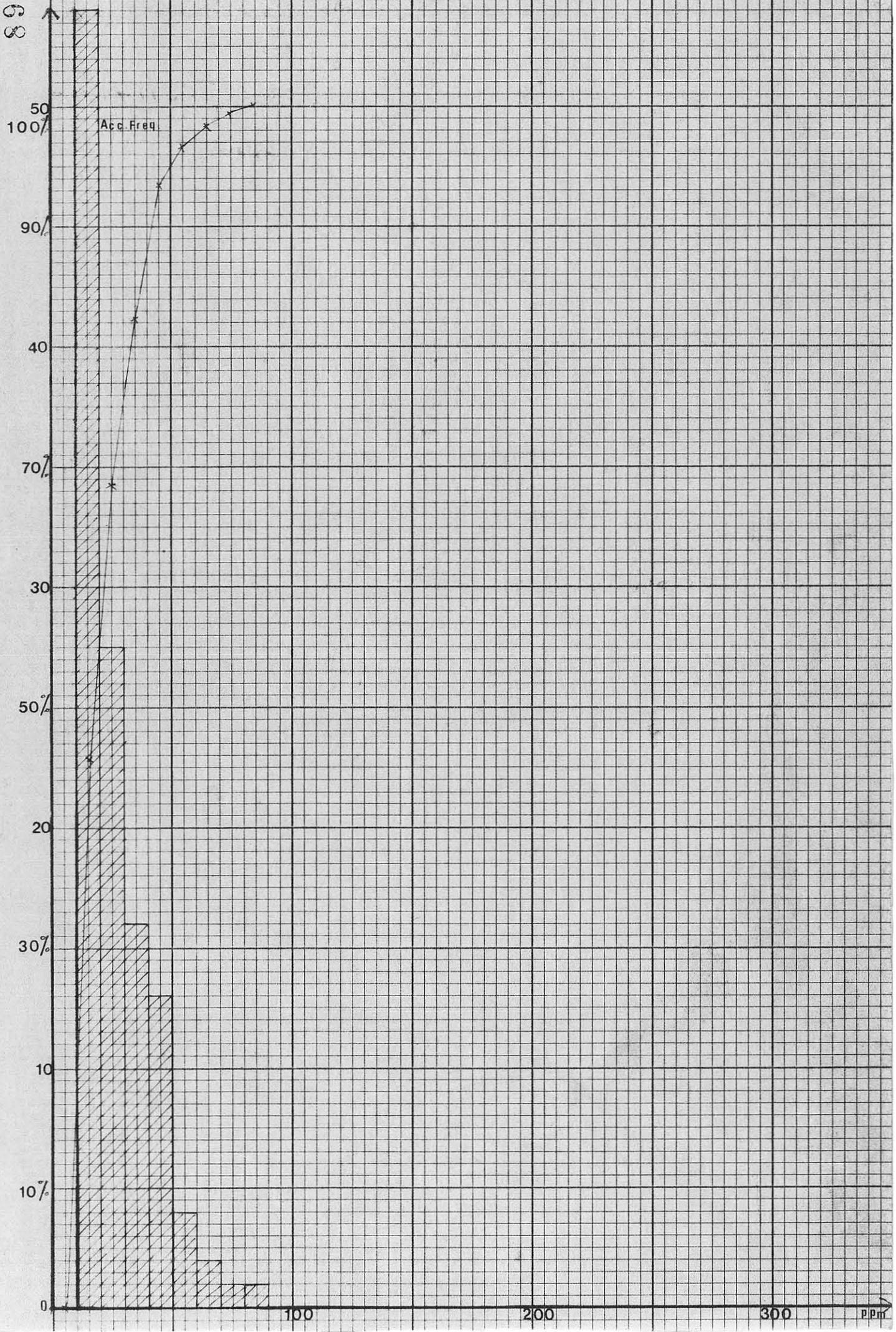
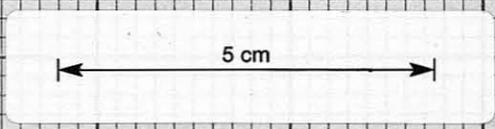


020

898022

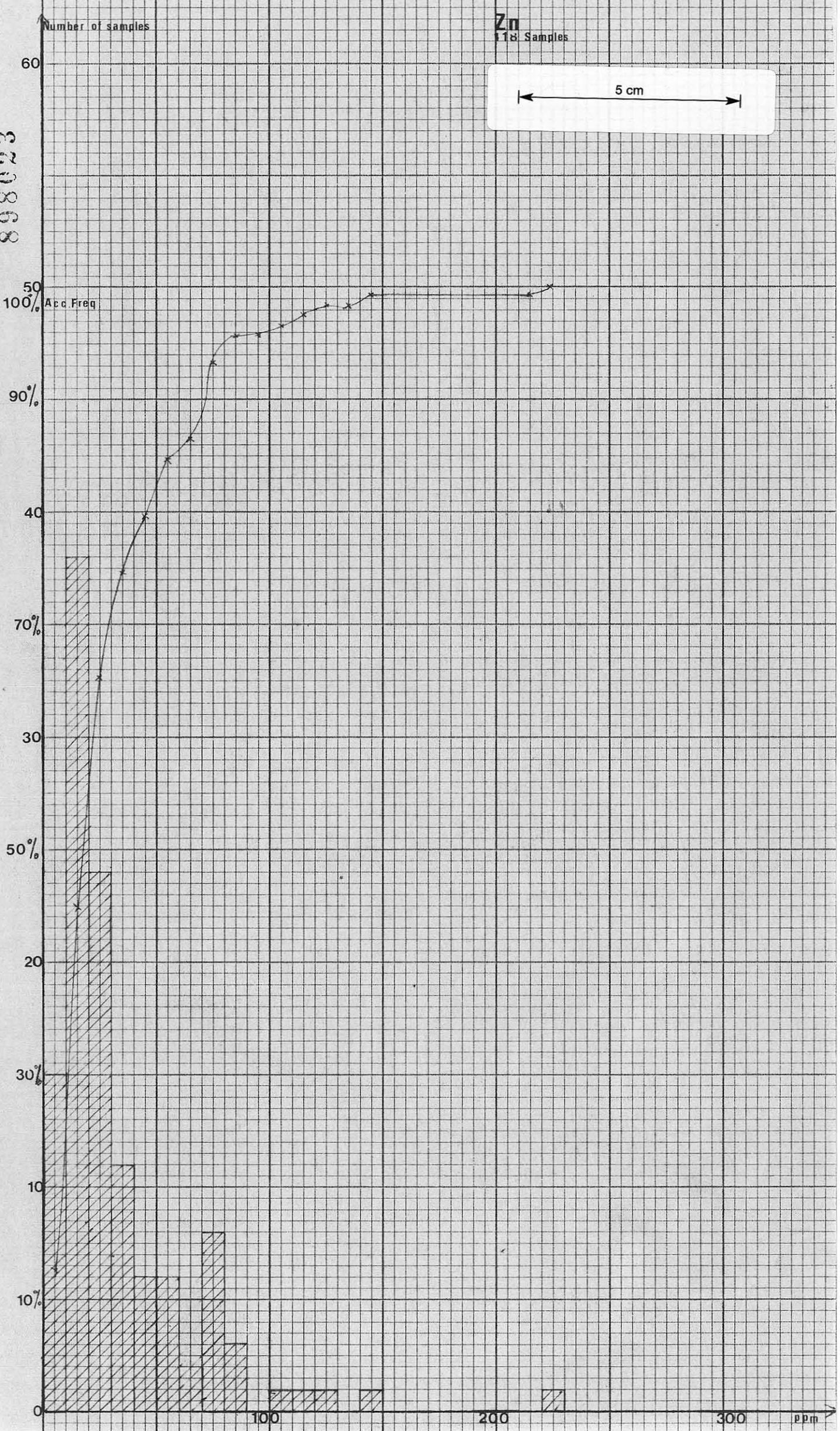
Pb 118 Samples

Number of samples



021

898023

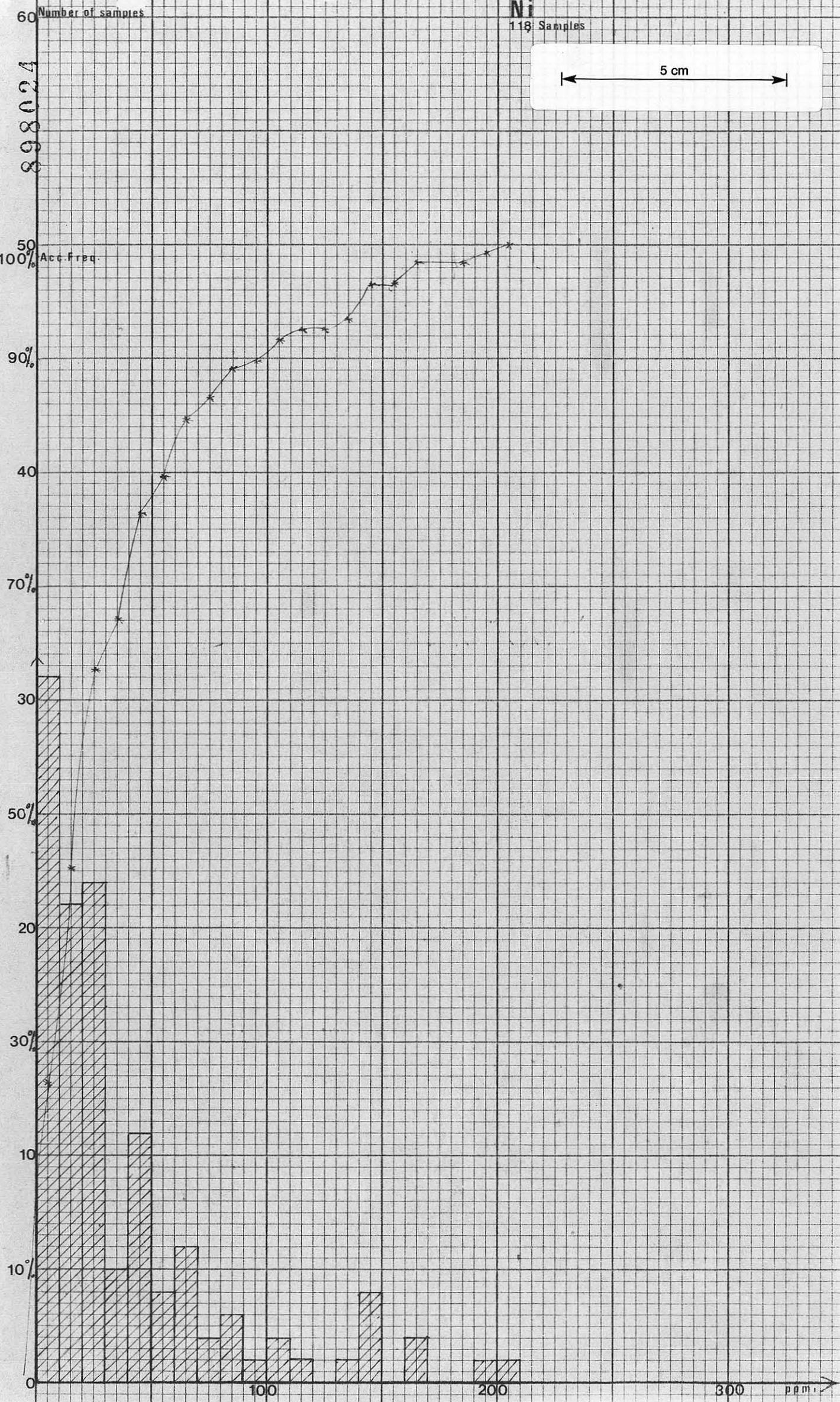


Ni
118 Samples

5 cm

Number of samples

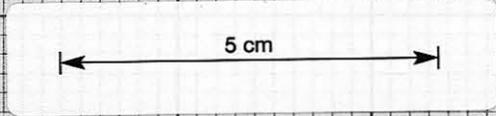
100% Acc. Freq.



13

Number of samples
87

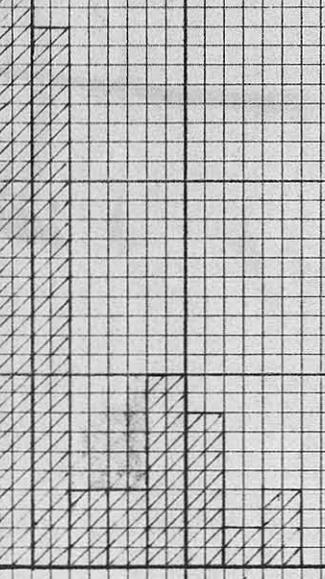
Co
118 Samples



60
50
40
30
20
10
0

100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%

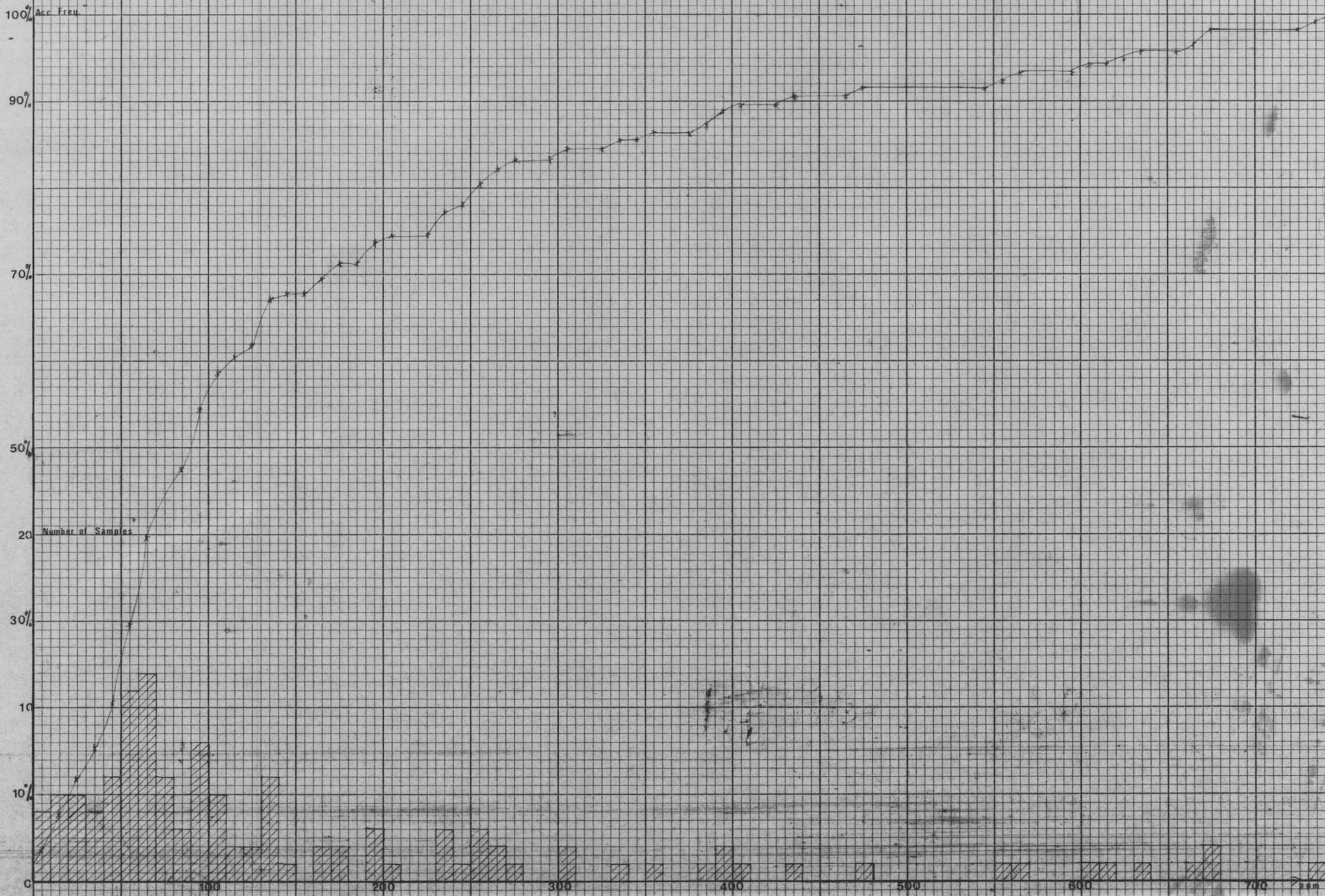
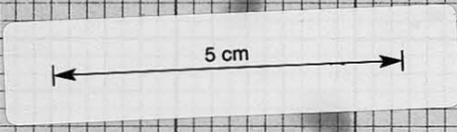
Acc. Freq.



100 200 300 RPM

898026

Cr
118 Samples



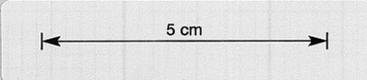
25

898027

Number of Samples

50
40
30
20
10
0

Ba
118 Samples



Number of Samples

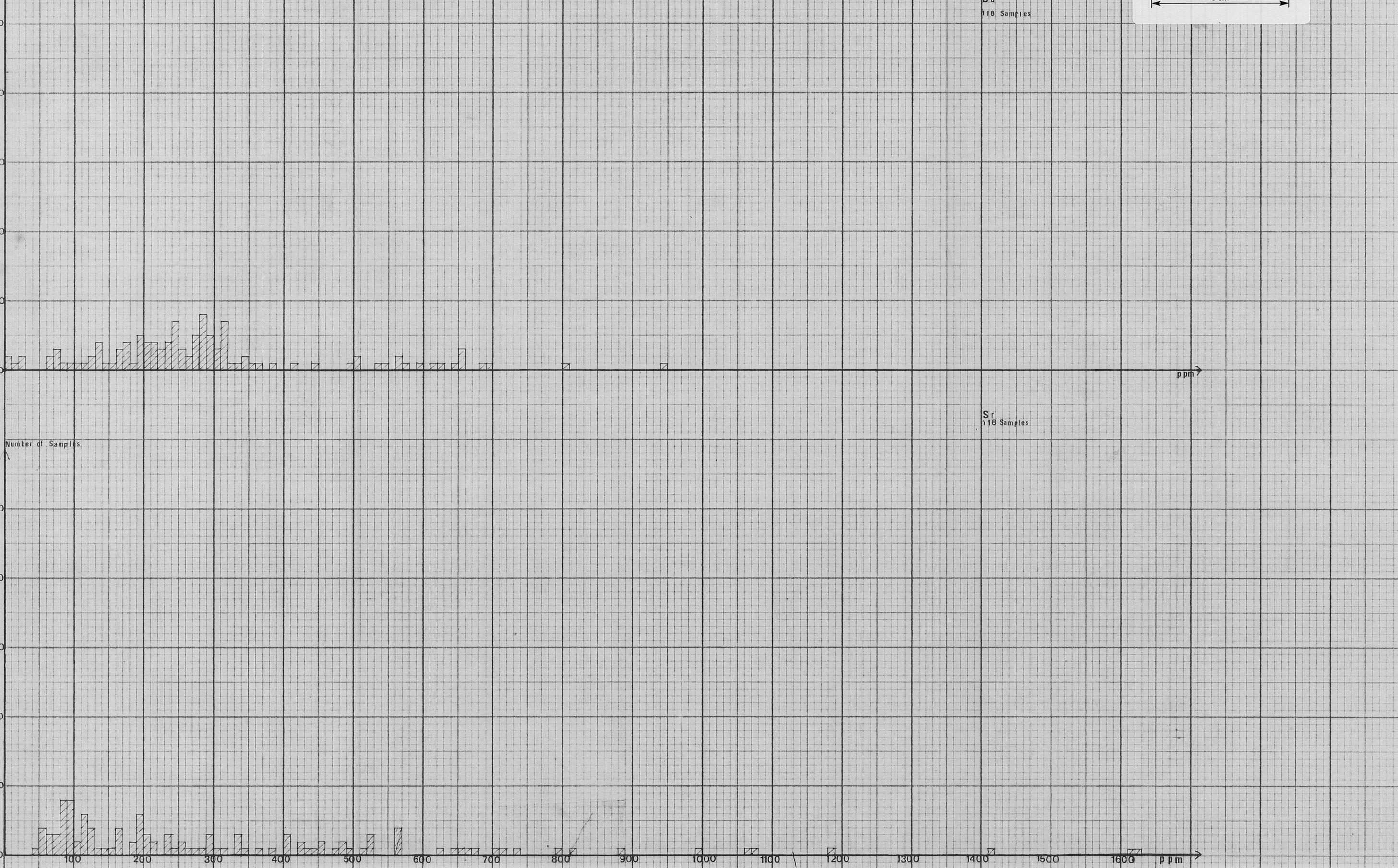
50
40
30
20
10
0

Sr
118 Samples

p pm

p pm

100 200 300 400 500 600 700 800 900 1000 1100 1200 1300 1400 1500 1600



Number of Samples

101

W
118 Samples

5 cm

60

80

898028

8

50

100%

90%

40

70%

30

50%

20

30%

10

10%

0

Acc. Freq.

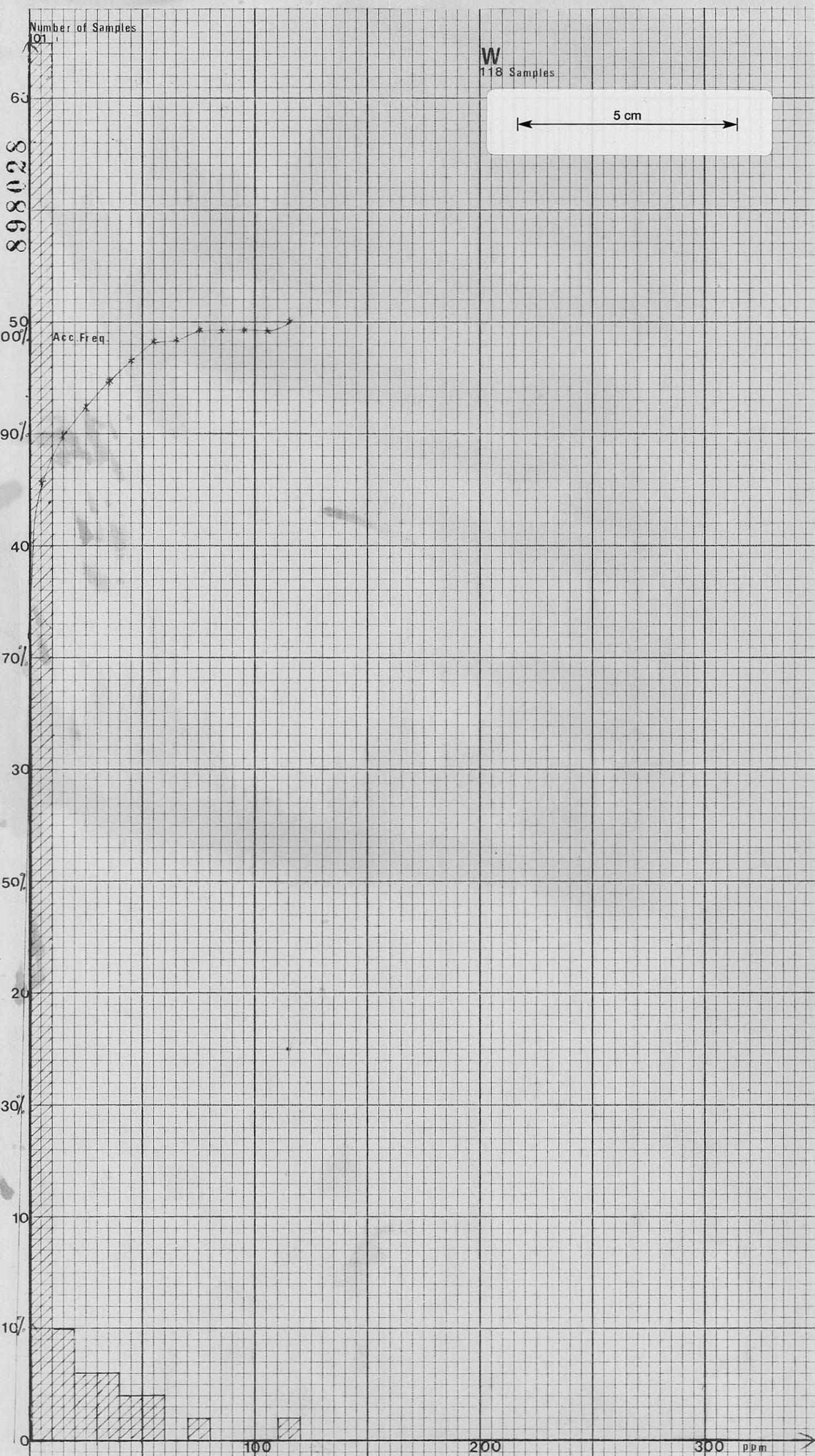
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100

200

300

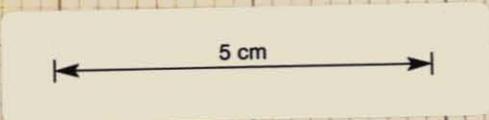
ppm



898029

Number of samples

Cu
34 Samples
Mica Schist



20

10

0

100

200

300

48

20

10

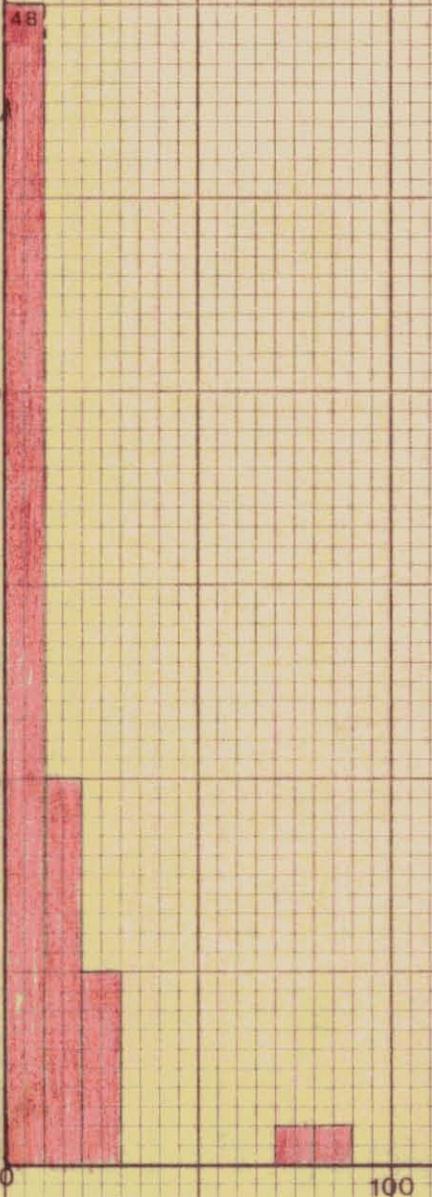
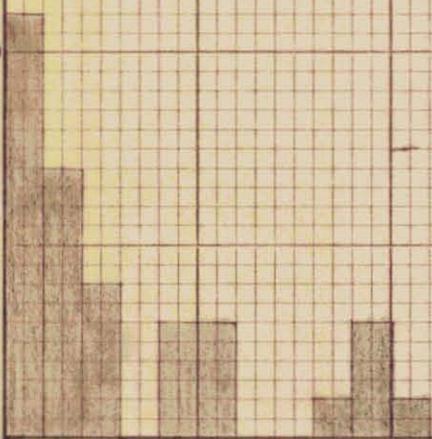
0

100

200

300

ppm



65 Samples
Granite

898030

Number of samples

Pb

34 Samples
Mica Schist

5 cm

20

10

0

20

10

0

100

200

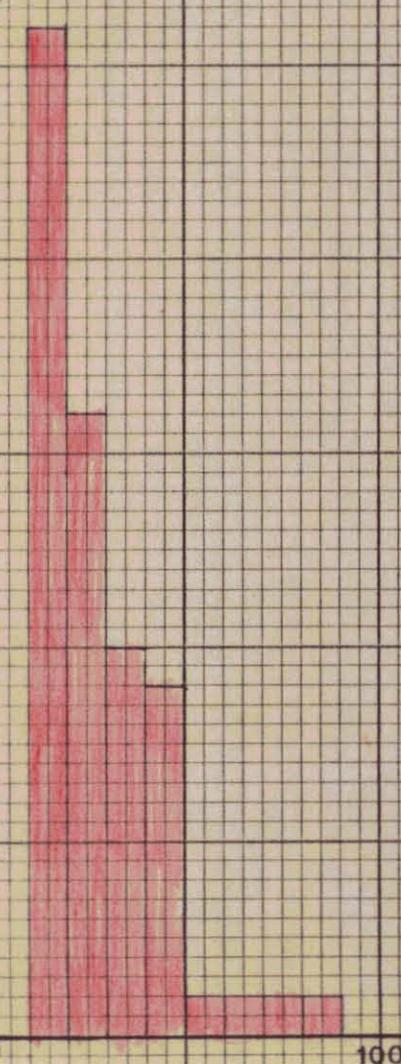
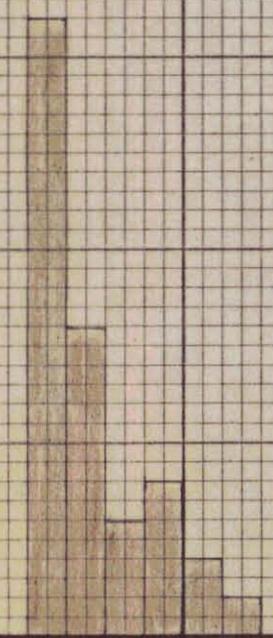
300

ppm

65 Samples
Granite

0

0



829

898031

Number of samples

Zn
24 Samples
Mica Schist

5 cm

20

10

0

100

200

300

ppm

Granite
65 Samples

20

10

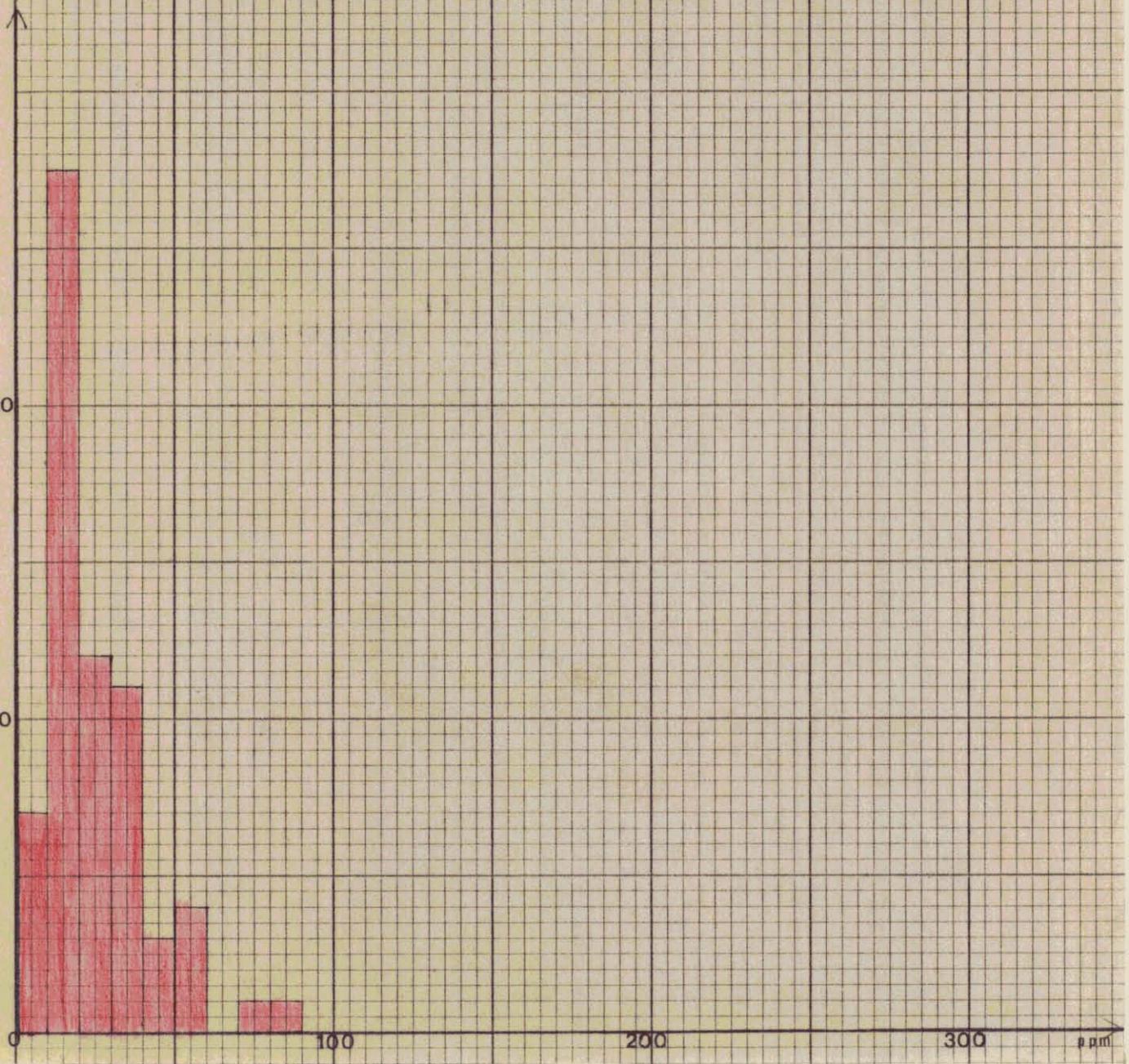
0

100

200

300

ppm



30
898032

Number of Samples

Ni
34 Samples
Mica schist

5 cm

20

10

0

100

200

300

ppm

Granite
65 Samples

20

10

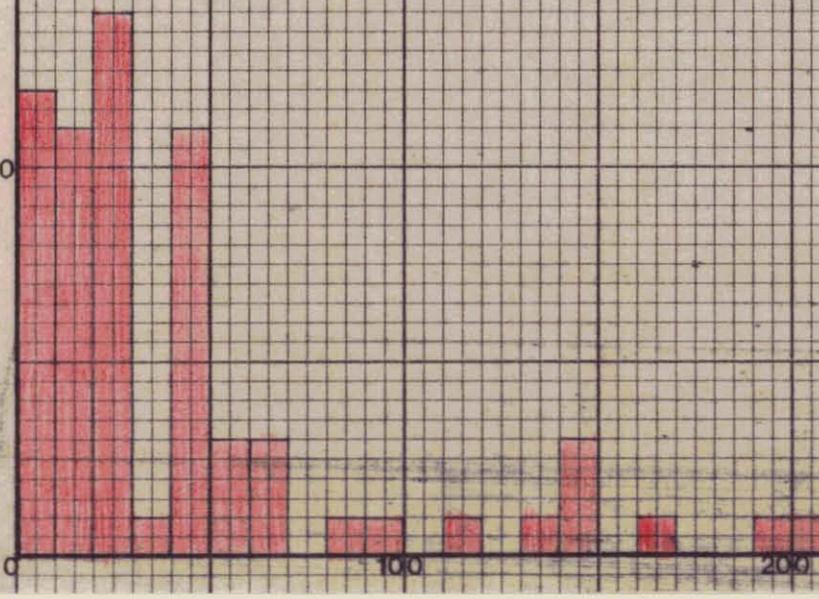
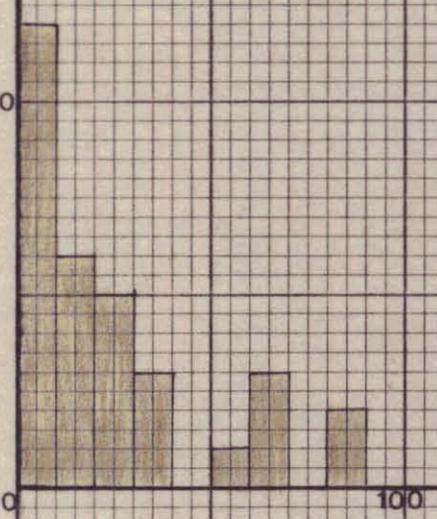
0

100

200

300

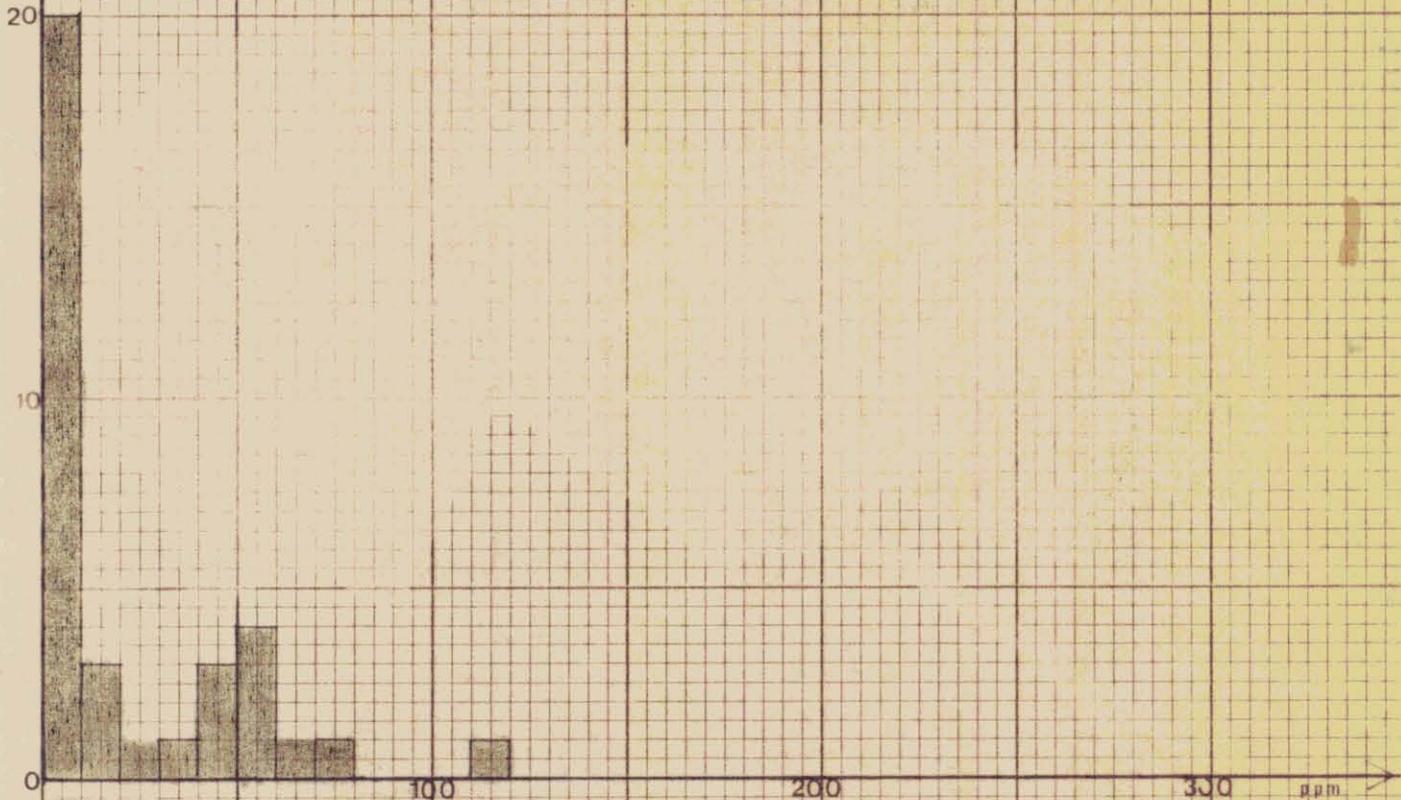
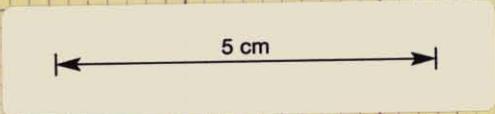
ppm



898033

Number of samples

Co
34 Samples
Mica Schist



Granite
65 Samples



1905

898034

71-742

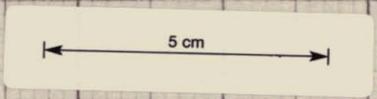
Number of Samples

20

10

0

Cr
34 Samples
Mica Schist



ppm

Number of Samples

20

10

0

Cr
65 Samples
Granite

ppm

100

200

300

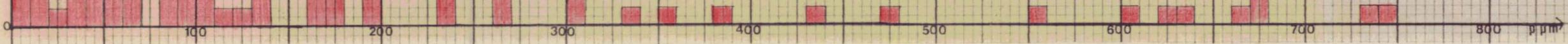
400

500

600

700

800



1306

898035

71-742

5 cm

Ba
34 Samples
Mica Schist

Ba
65 Samples
Granite

Sr
34 Samples
Mica Schist

Sr
65 Samples
Granite

Number of Samples

Number of Samples

Number of Samples

Number of Samples

20

20

20

20

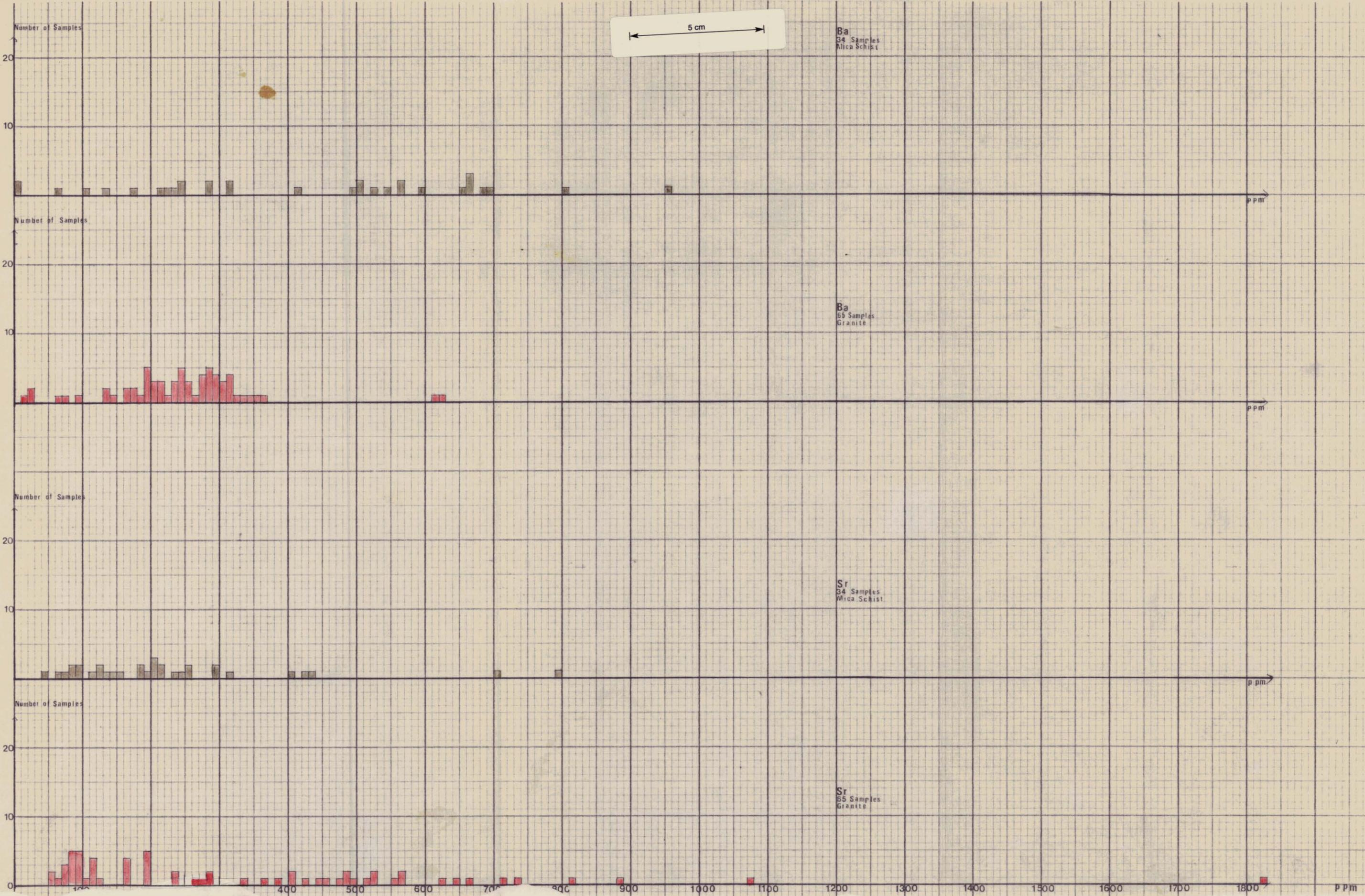
0

ppm

ppm

ppm

ppm



898036

Number of samples

34

W
34 Samples
Mica Schist

5 cm

20

10

0

100

200

300

ppm

63

20

10

0

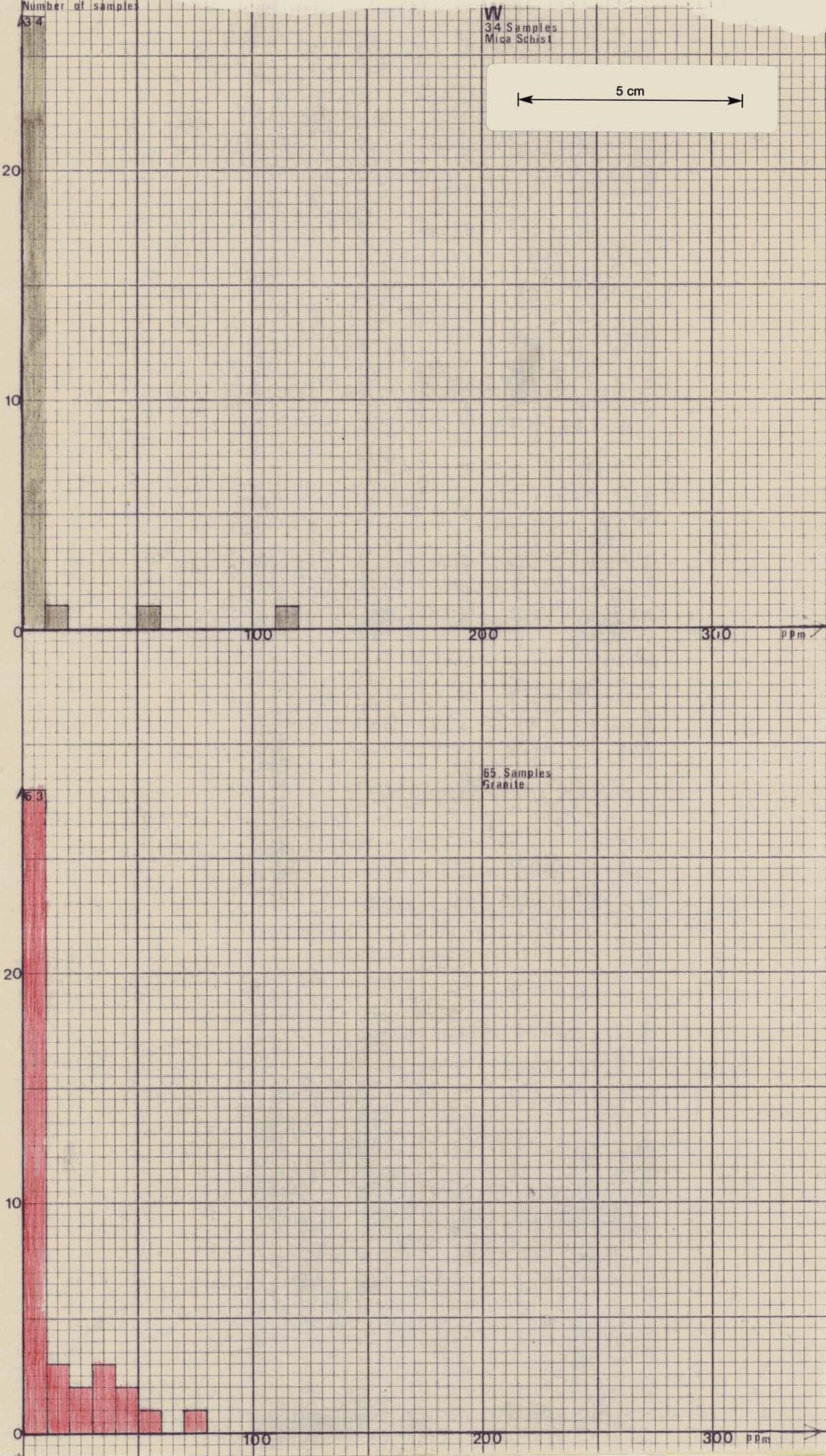
100

200

300

ppm

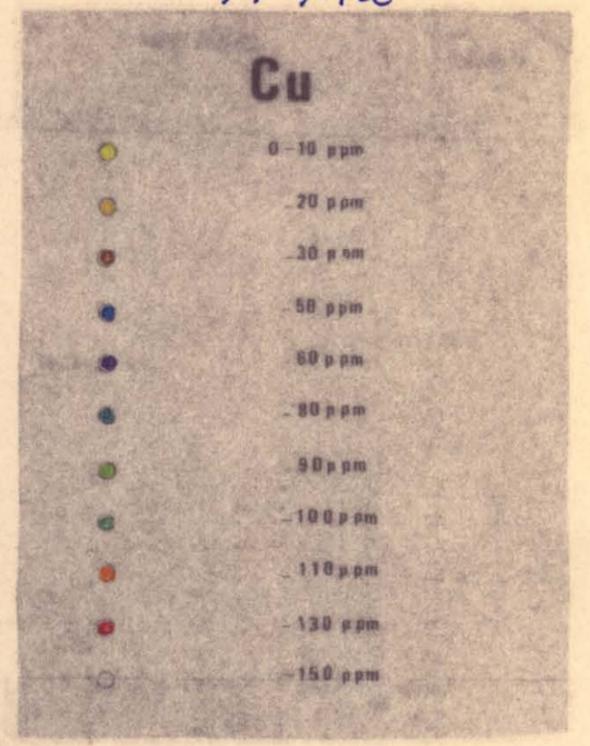
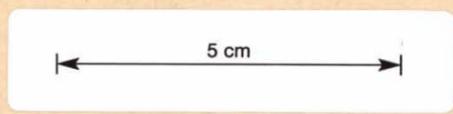
65 Samples
Granite



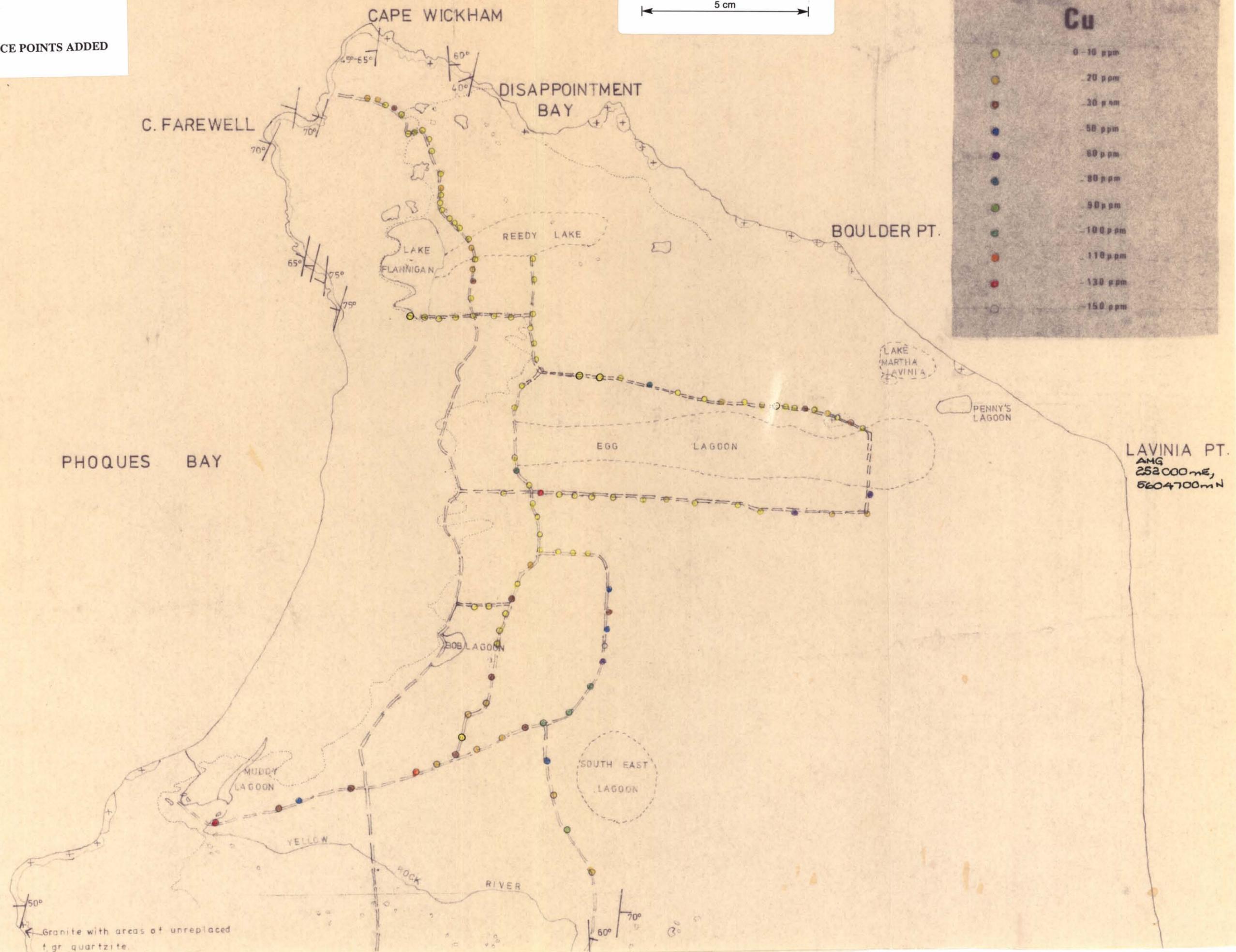
1307

71-742

AMG REFERENCE POINTS ADDED



898037

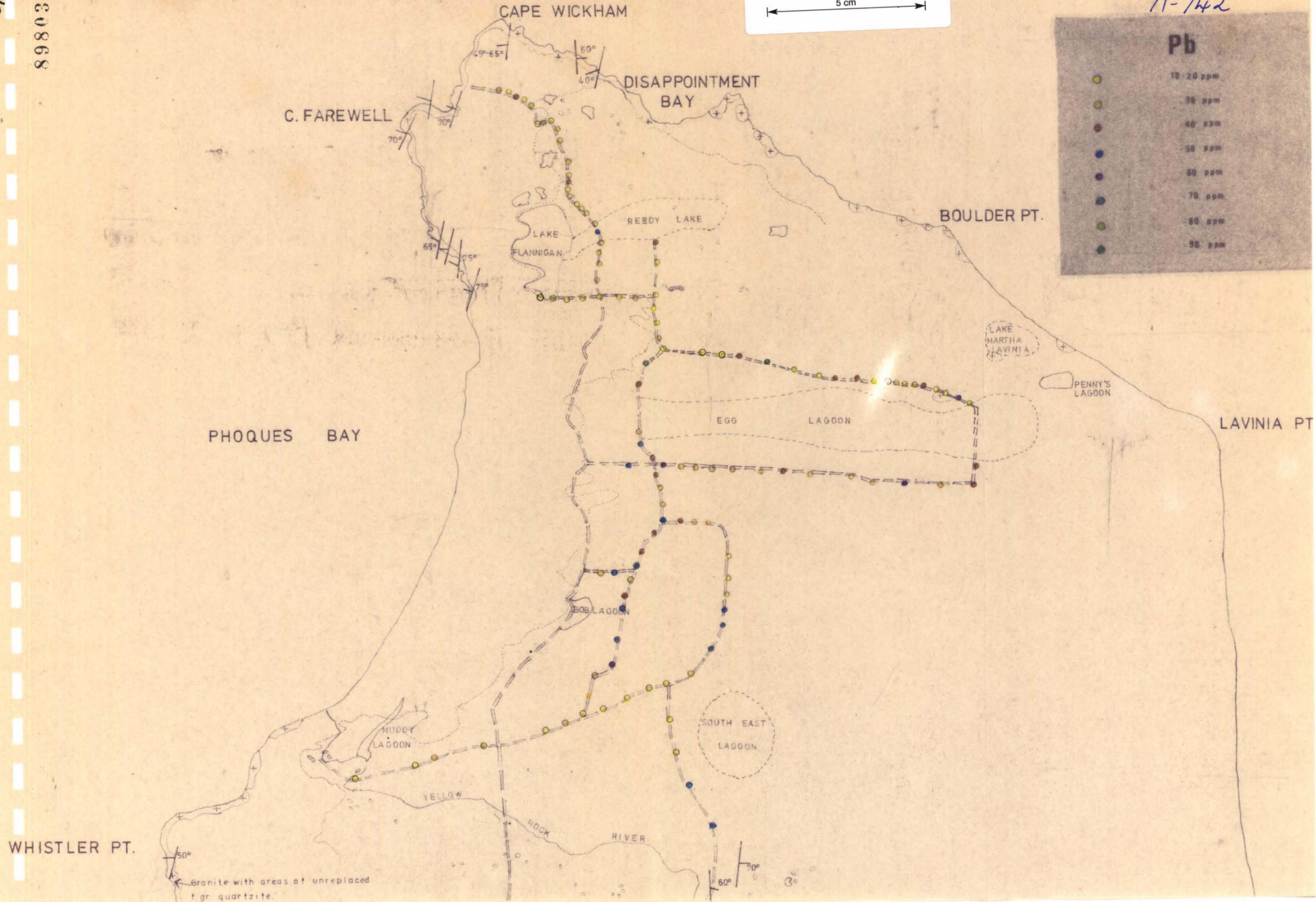
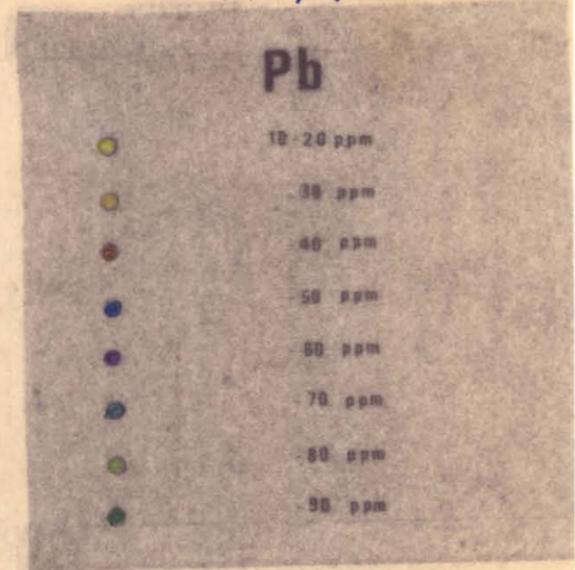
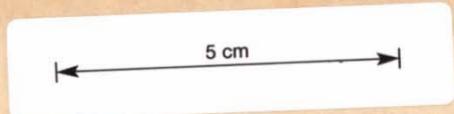


LAVINIA PT.
AMG
252000mE,
5604700mN

1903

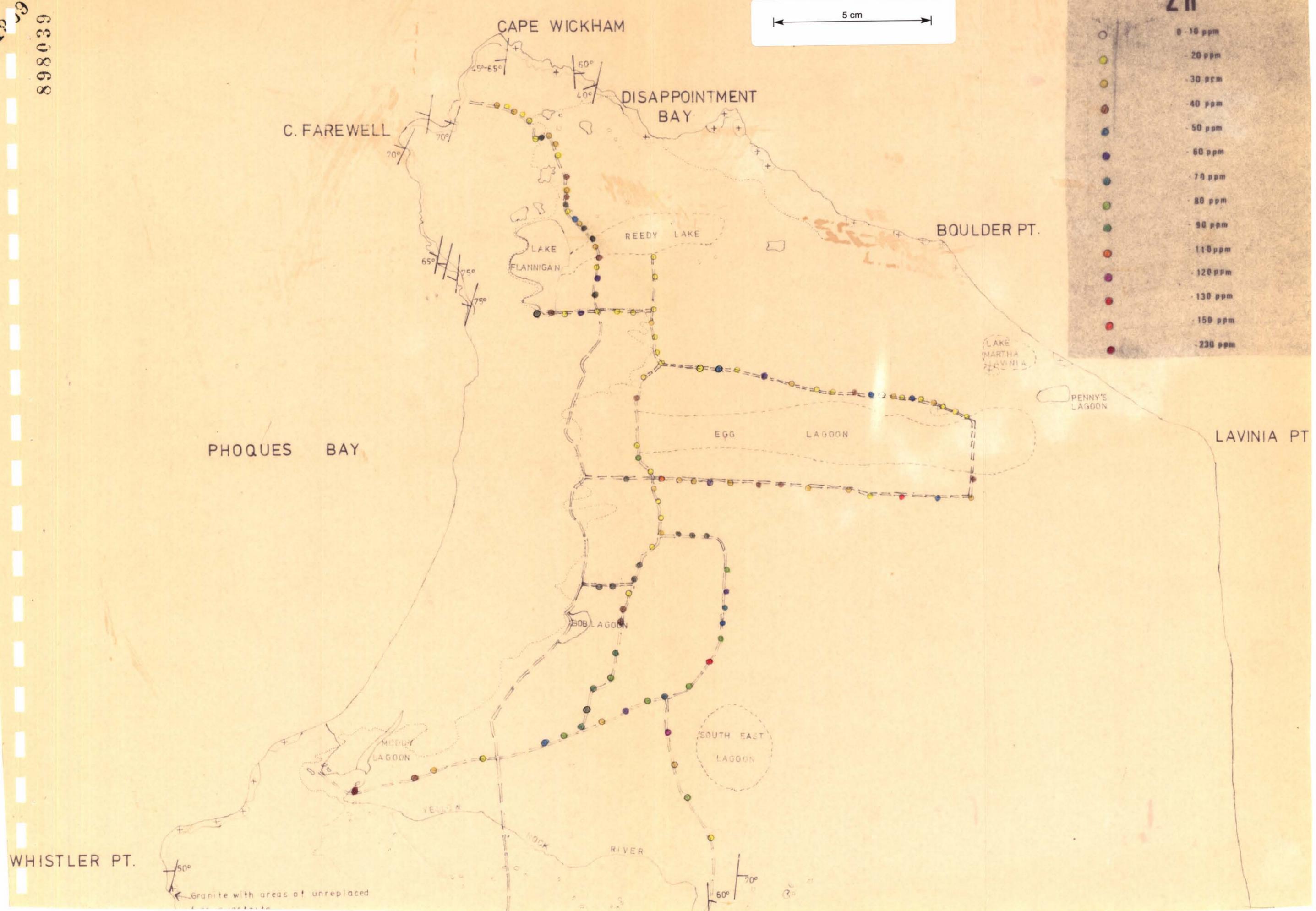
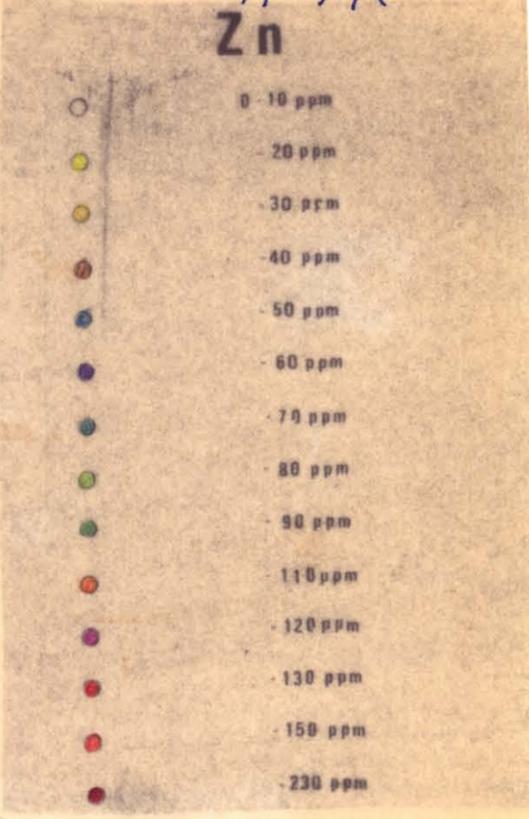
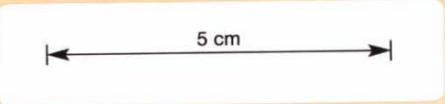
898038

71-742



898039

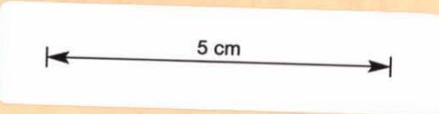
71-142



1910

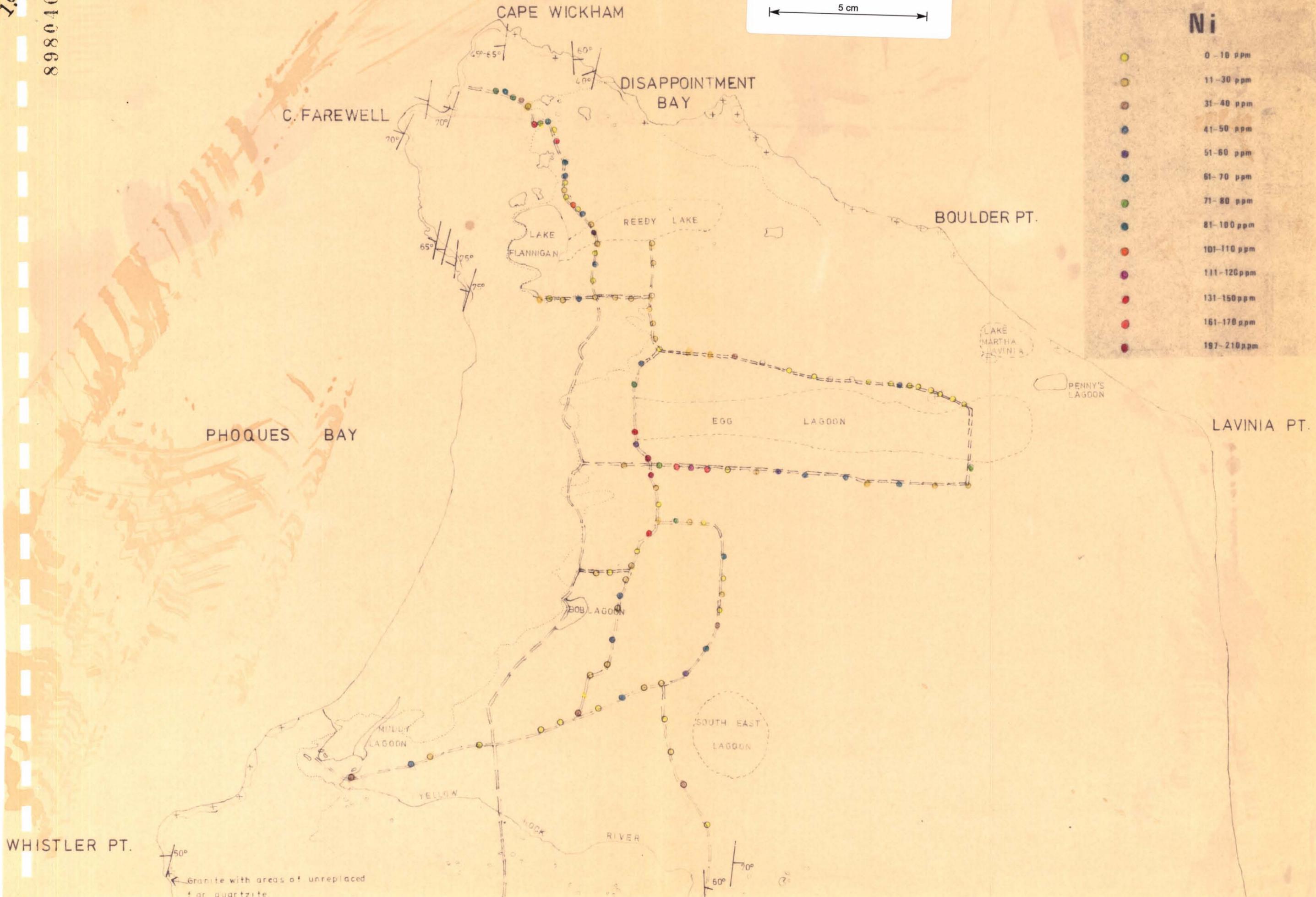
898040

71-742



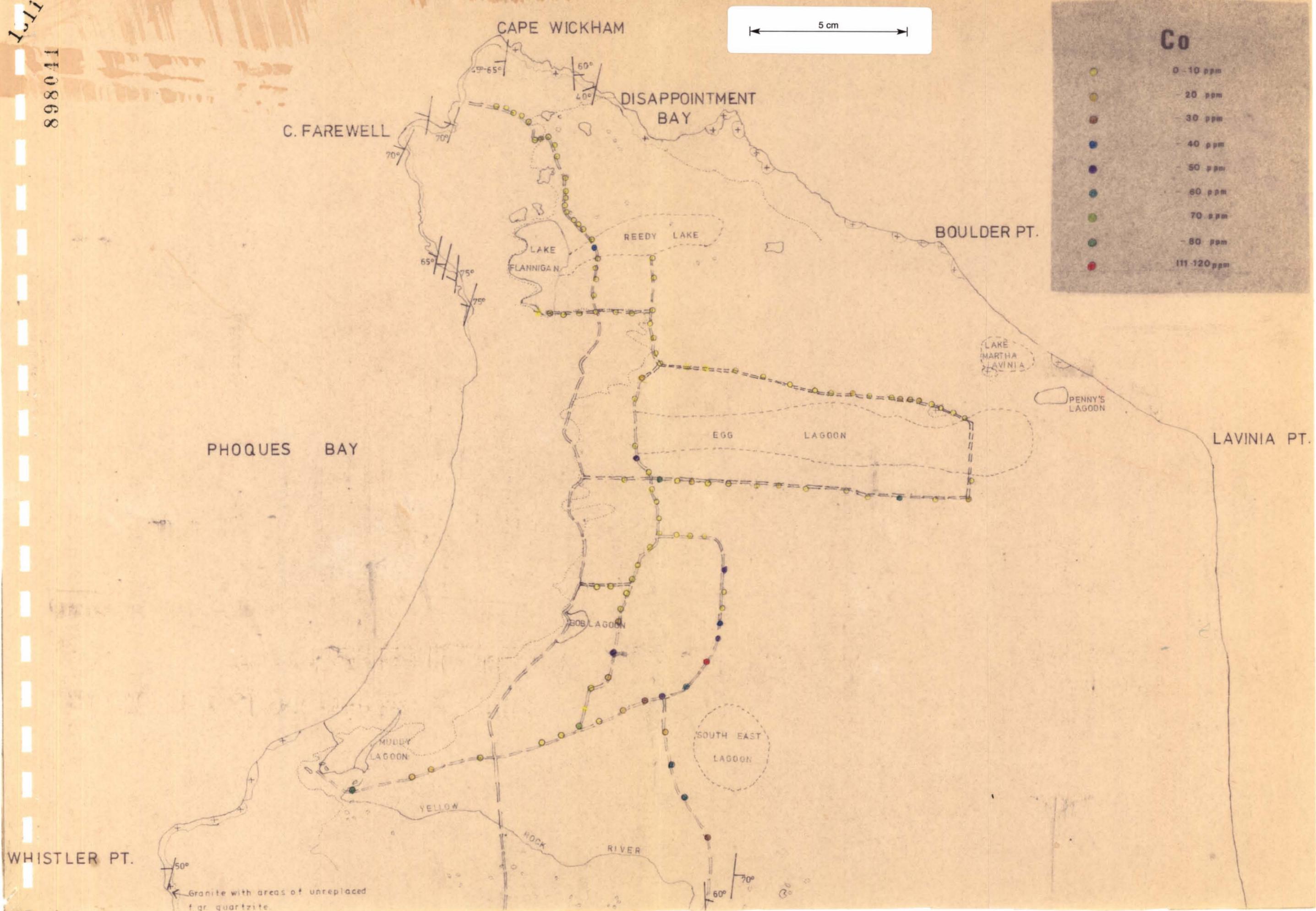
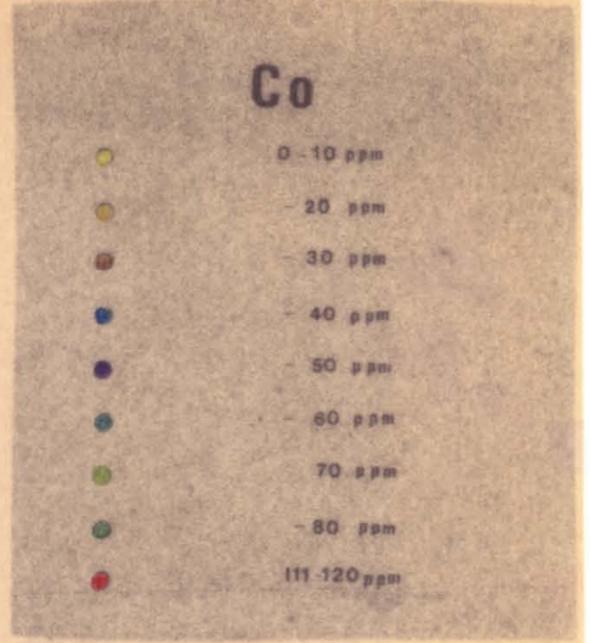
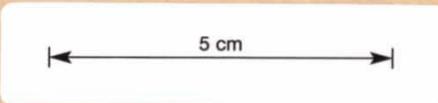
Ni

●	0 - 10 ppm
●	11 - 30 ppm
●	31 - 40 ppm
●	41 - 50 ppm
●	51 - 60 ppm
●	61 - 70 ppm
●	71 - 80 ppm
●	81 - 100 ppm
●	101 - 110 ppm
●	111 - 120 ppm
●	131 - 150 ppm
●	161 - 170 ppm
●	181 - 210 ppm



← Granite with areas of unreplaced
fgr quartzite

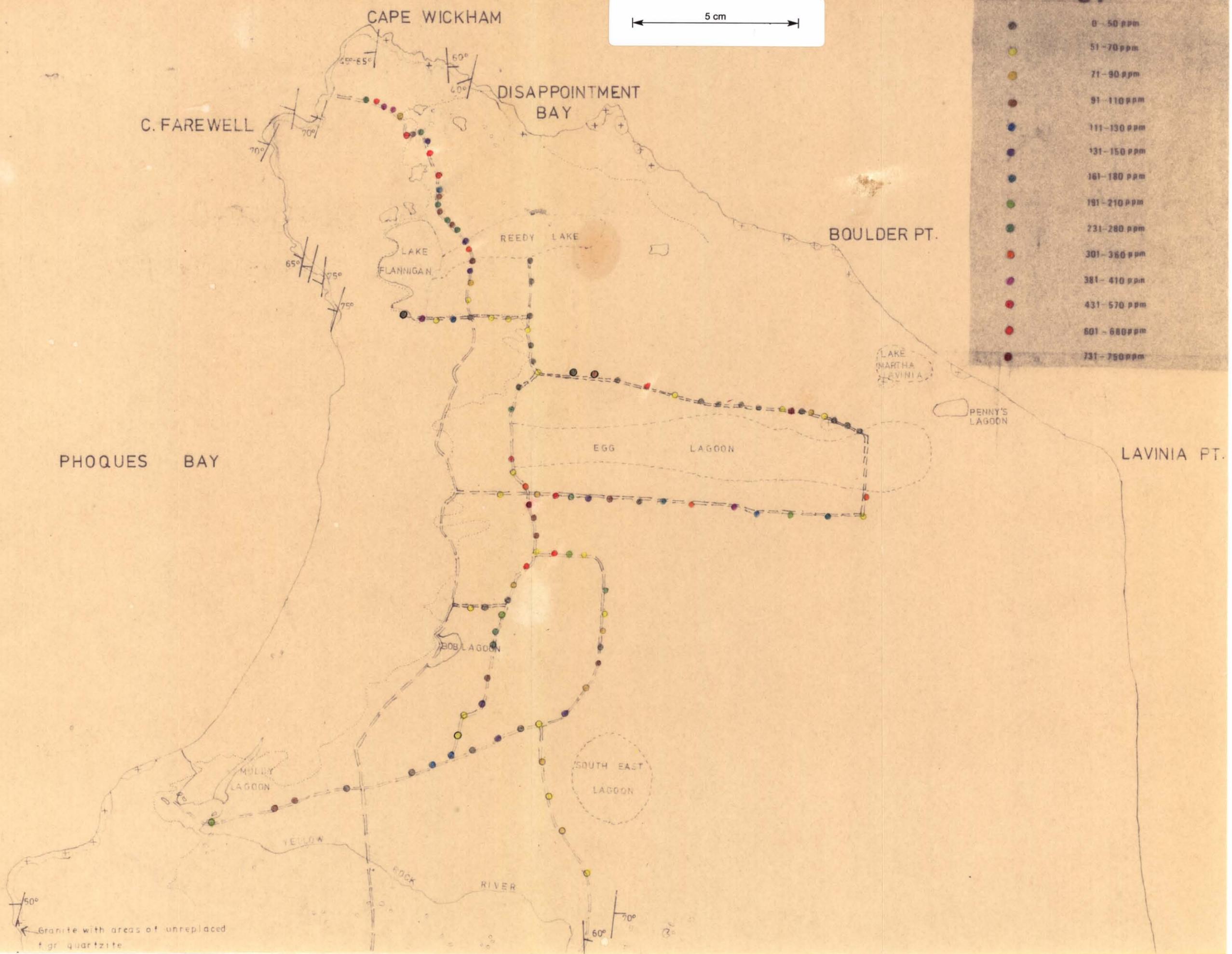
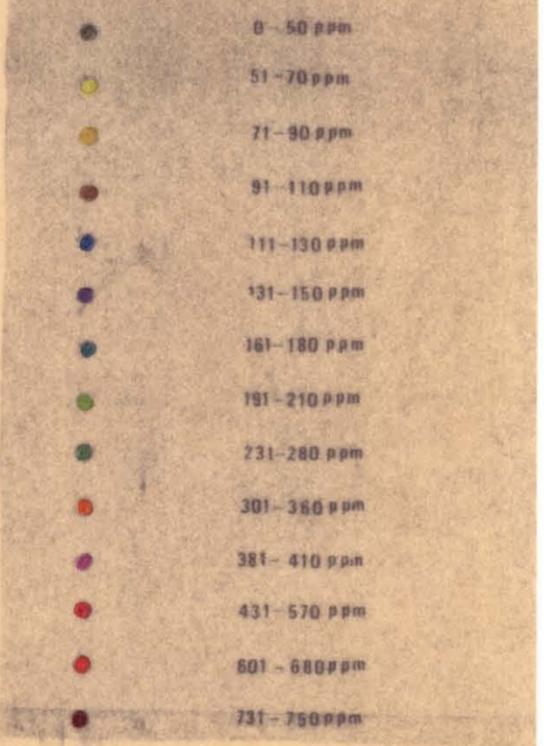
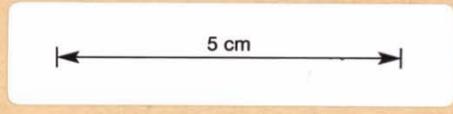
898041



Granite with areas of unreplaced f. gr. quartzite.

10-2
898042

71-742
Cr



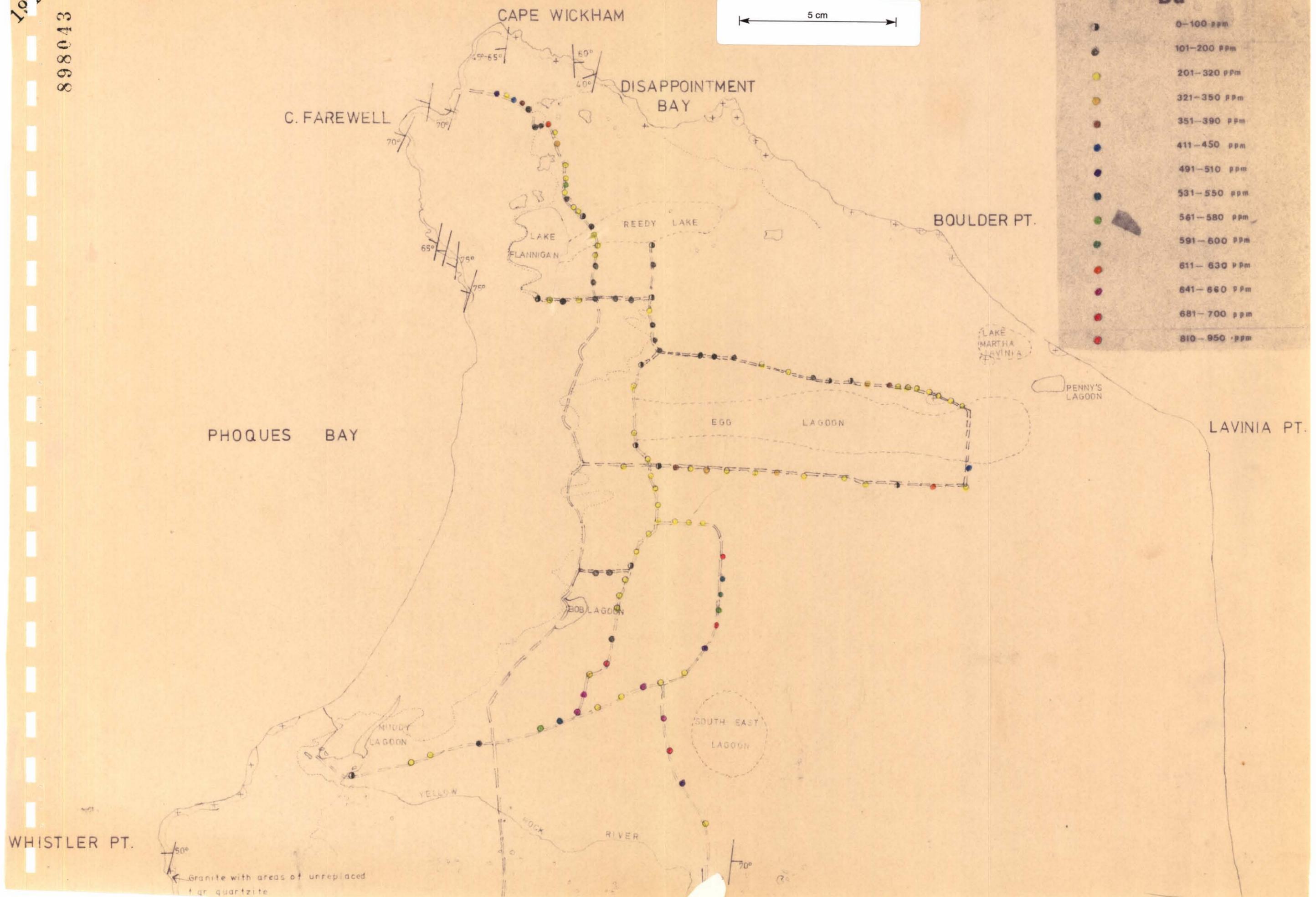
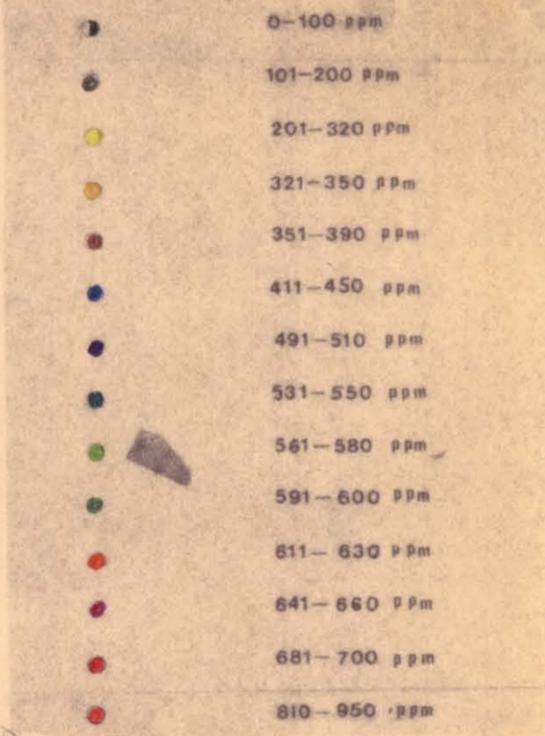
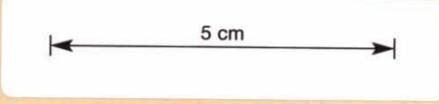
WHISTLER PT.

Granite with areas of unreplaced f.gr quartzite

10 3
898043

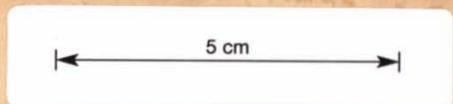
71-742

Ba

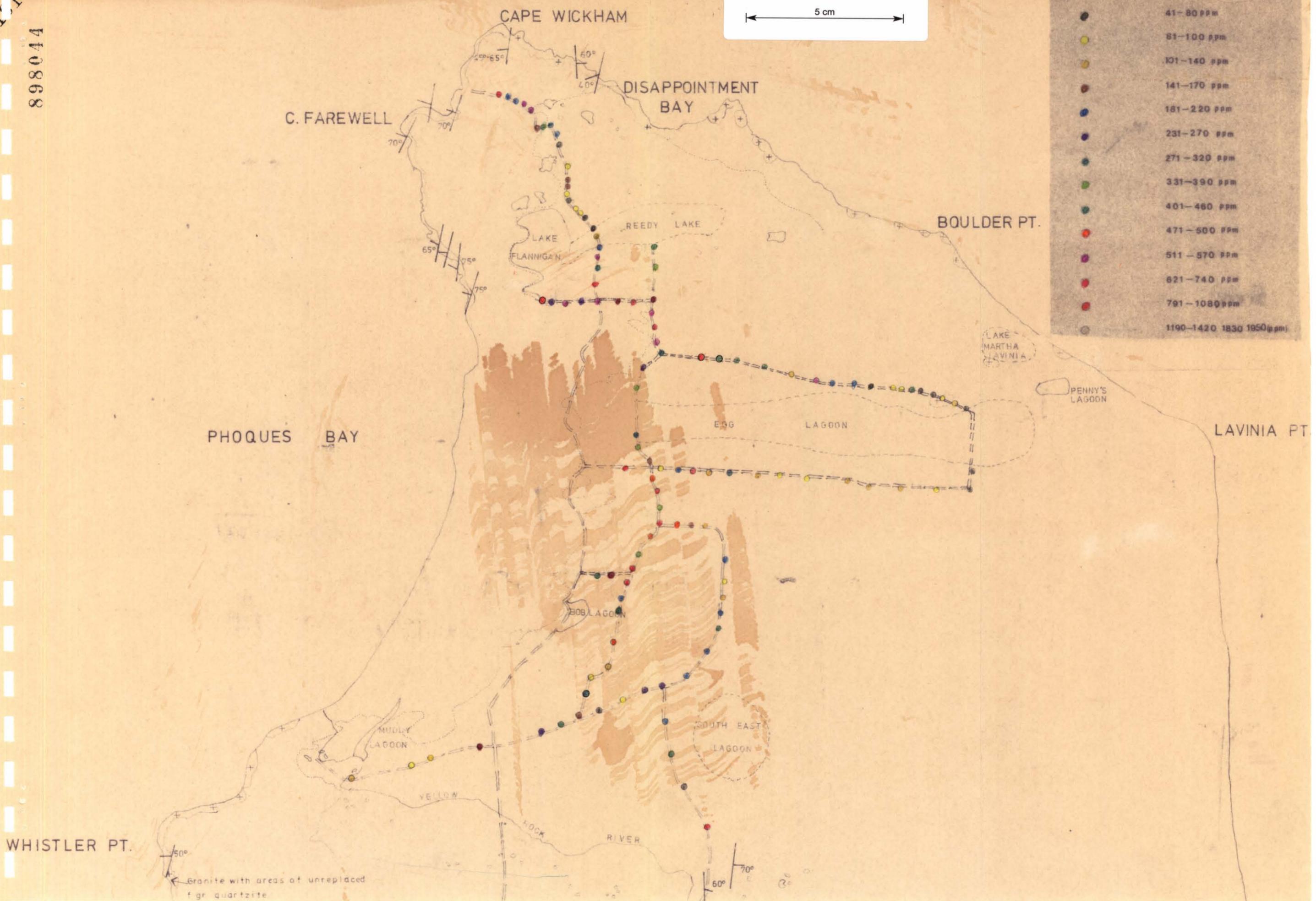


1014
898044

Sr 71-742



●	41-80 ppm
●	81-100 ppm
●	101-140 ppm
●	141-170 ppm
●	181-220 ppm
●	231-270 ppm
●	271-320 ppm
●	331-390 ppm
●	401-460 ppm
●	471-500 ppm
●	511-570 ppm
●	621-740 ppm
●	791-1080 ppm
●	1190-1420 1830 1950 ppm

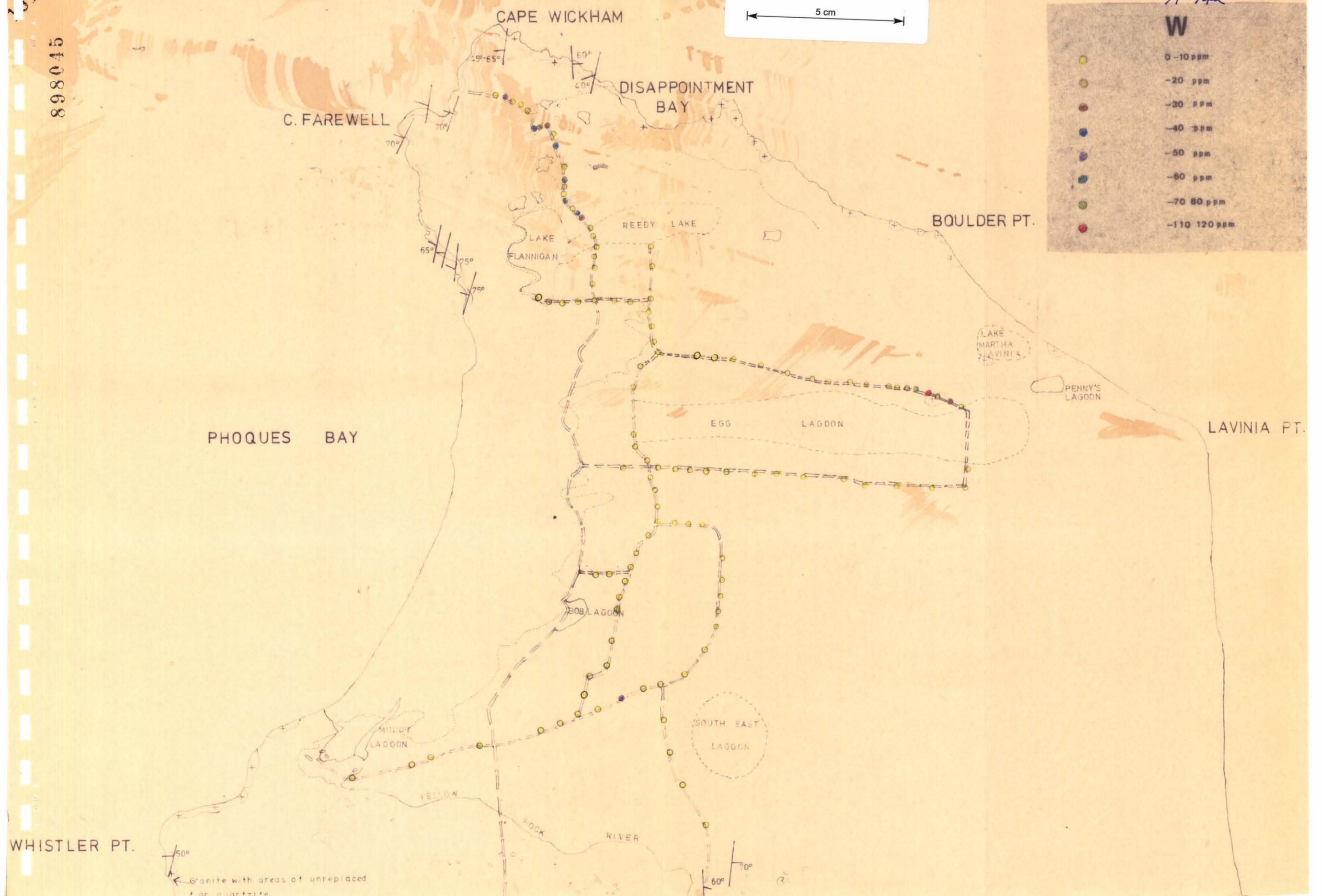
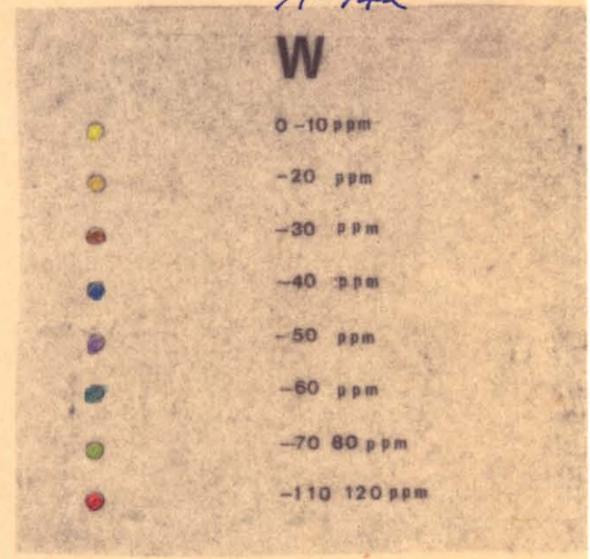
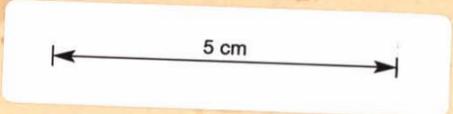


WHISTLER PT.

Granite with areas of unreplaced fgr quartzite

898045

71-742



Granite with areas of unreplaced fgn quartzite

1016
898046

71-742.

